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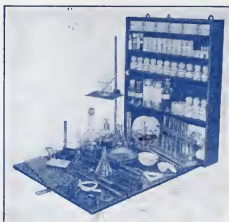
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December

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Editor

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"THE REIGN OF THE ROBOTS"
By Edmond Hamilton



In This Issue

"THE TIME STREAM"
By John Taine

Other Science Stories

"LORD OF THE LIGHTNING"
By Arthur K. Barnes

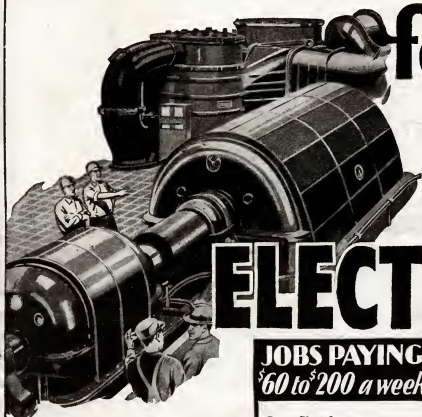
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Vol. 3, No. 7

DECEMBER, 1931

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ON THE COVER

this month, taken from Edmond Hamilton's "Reign of the Robots," we see the machine masters snatching the girl-slave Eds from the hands of her saviors from the 20th century. On the ground are the flasks of the time drug that the 20th century men have just drunk, that will whisk them back to their own era.

NEXT MONTH

"THE DUEL ON THE ASTEROID"

by P. Schuyler Miller and Dennis McDermott
is our feature story for the January, 1932, issue

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FOR OTHER STORIES FOR NEXT MONTH PLEASE
TURN TO PAGE 859

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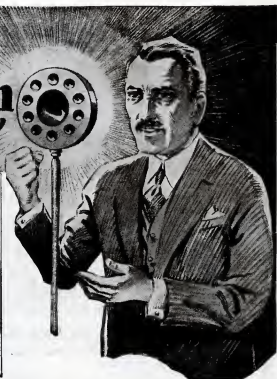
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By HUGO GERNSBACK

IT HAS often been said, and with considerable truth, that there is nothing more preposterous and incredible than life itself. Life, as compared with the rest of nature, is so infinitesimal that it is ludicrous. Taking a census of all life on this planet, and expressing it in terms of weight of the various human beings and animals, the ratio will be less than 1/100,000,000 of the weight of the planet. If you try to make a comparison of the weight of all life with that of a single star such as our Sun, it will be obvious that the final result can only be expressed by a string of zeros to which the imagination cannot do justice any longer.

We do not know when life originated, whether on this planet or on some other; and for our purpose here it makes little difference. Life no doubt originated somewhere—the how and why being little understood—and it is doubtful whether we shall ever know its origin, and much less shall we know what life really is.

It is significant, however, that the higher forms of life must have certain conditions such as an atmosphere and a definite temperature range; which is quite narrow and sharply defined. Above 140 degrees, Fahrenheit, and under 20 below zero, organized life, as a rule, cannot be supported. This, again, tends to show how much at variance we are with the rest of the universe.

On the upper end of the scale, we find stars such as our sun where the temperature is 11,000 to 27,000 degrees Fahrenheit; while in interstellar space we have practically an absolute zero at minus 460 degrees Fahrenheit. You can see, therefore, what a precarious foothold we have, and that it will not take much of a climatic derangement either way to snuff out organic life. The wonder is that life has been at all possible under the conditions.

Of course, when we speak of life, there are all sorts of "life." At the upper end of the scale of life we find life forms more

sensitive to little changes of temperature and little changes in the contents of the atmosphere than lower forms of life. For instance, you can take a fish and freeze it solid into a cake of ice, and keep it in this condition for some months; then, after you thaw it out, it will swim again. Obviously, you can't do this with a human being.

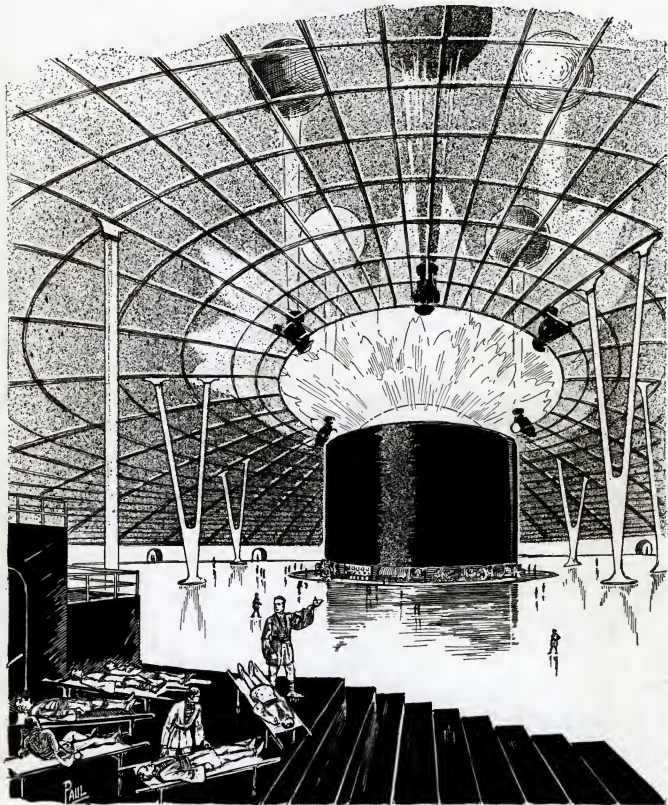
All of this life is, of course, animal life, but nature does not stop there. We can still go further down the scale and find plant life, which is even harder in some respects. A number of microscopic forms of life can live in a temperature not far from the absolute zero and survive the ordeal for a considerable length of time. At the other end of the scale, certain germs (as for instance those of anthrax) can manage to live for a few minutes even in boiling water, and for quite a long time in very hot water without dying.

It is naturally impossible, as far as we know, to freeze a tree too much because you will kill its life if the process is too severe; but life-giving spores can survive even interstellar cold without being the worse for it. This led the famous Swedish scientist Svante Arrhenius to believe that life may have come to us from other planets through the means of life-bearing spores. These spores, microscopic in dimensions, could float free in space and could be given motion by the sunlight, due to the pressure of light. Such spores could roam around the universe for millions of years until, falling upon a planet like ours, they revived and started germinating. All this is quite possible. Then, all that is required are proper conditions and plenty of time. A few life-giving spores, although the lowest form of life, would in time produce all the various species through the ages.

All far more incredible than the wildest outburst of the science fiction author—yet, all possible.

The Time Stream

By JOHN TAINE



(Illustration by Paul)

Then suddenly a splendid eruption of dazzling sparks burst from the incandescent surface of the ball. An agonized groan behind us steadied my brain and I turned around.

By the Author of "The Purple Sapphire," "Quayle's Invention," "The Iron Star," etc., etc.

CHAPTER I Sent Back



WE have explored to its remotest wildernesses a region that all but a few hold to be inaccessible to the human mind. Yet, in looking back after twenty-five years at the colossal drama which unrolled with stunning rapidity before our bewildered consciousness, I can see in it all no incident more mysterious than the unquestioning faith with which we accepted our guide—the venerable Georges Savadan—at his own valuation. That granted, the rest followed with a magnificent inevitability. It was like the running down of Sylvester's watch when the mainspring snapped; a trivial accident precipitated events which time had been holding in suspension for ages.

We fell in with Savadan's suggestions as readily as if they had been the natural promptings of our own minds. Indeed, with the exception of Beckford, we seemed at every step of our progress into the unknown to anticipate the old man's will. The sudden transformation of the Savadan whom we had so often watched dreaming over his port at Holst's, into the resolute, energetic leader alert to every hint of danger, caused us no surprise. It was a change for which we were secretly prepared. We had known the old man subconsciously all our lives.

Surely there never was a company of explorers less likely than ours to penetrate the dim secrets of the future; but so we did. It matters little what our occupations were when we set out, exactly a quarter of a century ago, on our explorations. Nevertheless, as our lives and all of our daily activities acquired a strange significance in the light of our adventures, I shall briefly state who and what we were, and how we started.

The place and date are extremely important. We first succeeded in entering the time stream in San Francisco, on the fourteenth of April, 1906. That was precisely four days before the city was destroyed by earthquake and fire.

The mere catalogue of our party follows, with their nationalities and places of birth, and their ages in 1906.

Colonel Dill, born in Tennessee, veteran of the Civil War, age 66. Habitually in need of money, and eager to imbibe any amount of whiskey at any other man's expense. Hobby, imaginary bloodshed.

Palgrave, born in San Francisco, age 26. Physician, specializing on morally and mentally unstable children.

This man is now the well known child specialist of New York. Hobby, color analysis.

Beckford, also born in San Francisco, age 27. Attorney and orator. Lifelong friend of Palgrave and, with him, suitor of Cheryl Ainsworth. Hobby, oratory.

Ducasse, born in France, age 25. Psychologist and student of philosophy, with strong leaning toward practical mechanics. Hobby, prison reform.

Herron, born in Chicago, age 24. Newspaper reporter. Hobby, deciphering of code messages.

Culman, born in Germany, age 47. Mechanical engineer and inventor. In easy circumstances, owing to a simple, lucky device for measuring flow in oil wells. Hobbies, hatred of war and a desire to expose the trickeries of mediums and others in some kinds of psychic research.

Sylvester, born in England, naturalized U. S. citizen, age 23. Lived at Los Gatos (three hours by train from San Francisco), where he had a paying ranch. Highly educated in modern theoretical physics—as it was in 1906, with ample leisure to continue his studies.

Savadan, born in France, age unknown, probably 65. Political refugee. Had lived for many years in San Francisco in very straitened circumstances.

Myself (Smith), born in San Francisco, age 24. Analytical chemist.

To this strange assortment three others may be added, although they were not strictly in our party. First there was Cheryl Ainsworth, age 24, who



JOHN TAINE

THE idea of travel in time, has no doubt captured the imaginations of our readers. Discussions pro and con, as to the nature of time, and the possibilities and effect of travel in time have waged through our discussion columns and an enormous amount of interest has been stirred.

What could be better to clarify that interest than a story by a man who is not only a master of science fiction, but also a scientist of the first rank. John Taine, is the pseudonym of a professor of mathematics at a leading American University, and a member of the National Academy of Science, that most aristocratic body of our foremost thinkers.

If the number of books of science fiction in print is any criterion then John Taine ranks with H. G. Wells. His "Purple Sapphire" created a virtual sensation. "Quayle's Invention," "The Iron Star," "Green Fire," "The Gold Tooth," "The Greatest Adventure," have been no less of successes. To this great company of novels, "The Time Stream" must now be added.

John Taine has probed deeply into the nature of time, and of time travel, and his ingenious mind has created a tremendous and thrilling story of the whole human race. The rise and fall of the race; the great cataclysm that sent men back to the brute; are all woven into a powerful and moving narrative. We are honored to present to our readers this science fiction classic.

must be noticed more in detail later. For the moment this mention of her is sufficient. Next there was Herr Holst, the genial proprietor of the inn where Dill, Palgrave, Beckford, Ducasse, Herron, Culman, Sylvester, Savadan, and I met once a fortnight to discuss everything in this world and the next. Last, there was John Petrie, prince of bartenders and quiet, unobtrusive host to our small crowd. Petrie's hobby was a very crude brand of astrology. He was one of us, although he never knew it and did not join us in our adventure.

ALL of these details, however, are of little importance. What I wish to bring out in citing them is merely that we were an apparently haphazard handful of acquaintances thrown together by chance. There were many such handfuls in the old San Francisco. We know now that ours was not governed by chance. Even before we somewhat rashly started, we had inklings of the truth.

What drew us together? What common interest could hold together a whiskey-sodden Civil War veteran, a brilliant young child specialist, a young lawyer, a student of philosophy, a newspaper reporter, an expert in modern theoretical physics, a mechanical engineer, a discredited French politician, and an analytical chemist, whose ages ranged from 23 to 66? What could possibly unite men of such a wide range of ages but a common interest in the nature of time? One "chance" remark or another had gradually attracted man after man to us, until in all eight of us stood on the threshold of reality without dreaming what door was presently to open. Chance, of course, played no part in drawing us together. We were already exploring, but we had lost our way.

I need not recall the long debates in which we indulged on the nature of time. Unaccountable at first, even to us, those puzzled arguments on the curiously unreal aspects of time as it appeared to us in our everyday lives, gradually assumed a deeper significance until at last, on the fourteenth of April, 1906, four minutes before midnight, events crystallized out of the waters of eternity, and we found ourselves. I pass on to these as rapidly as may be done clearly, and I shall state precisely how we ourselves, still dazed, began to learn the true meanings of our lives.

Our fortnightly reunion at Holst's was breaking up. Sylvester, anxious not to miss his train for Los Gatos, consulted his watch.

"Four minutes to twelve. I'll have to be running." He absent-mindedly began winding his watch. The mainspring snapped. The peculiar metallic click rocked my brain for a fraction of a second with an appalling vertigo. Recovering instantly, I heard Sylvester's awed voice: "I am beginning to remember. This is the time."

The aged Savadan was on his feet, listening intently. "You will all remember presently," he said. "Not here. Come to my attic at once. I—we all—must perform an experiment immediately."

Even Colonel Dill followed Savadan into the starry night without a word of dissent. Already we were walking in a dream more vivid than this thin shadow of reality which we call life. The night was cool and penetratingly clear. The myriads of icy white and steel-blue stars seemed to descend and blaze not more than a hundred feet above our heads when we turned toward

the East and walked, as Savadan said, to meet the sunrise. Savadan, it seems, had already remembered much. Sylvester, too, was far ahead of all but Savadan. As we turned the corner and came in sight of Savadan's lodging, Sylvester pointed up to a dark, almost starless region of the sky near the zenith.

"Look up there," he whispered, "and you will remember."

We looked where he pointed, but nobody answered. I had a haunting sensation of having watched that identical region of the sky in ages long dead and forgotten, waiting for the last rising of millions upon millions of dying suns.

We had reached our destination, still walking in a dream.

"I must ask you to go up quietly," Savadan requested, pausing with his hand on the door-knob. "The people here charge me only a nominal rent for my room, so I try to disturb them as little as possible. There are three flights before you reach my attic."

SAVADAN was about to enter, when Herron whispered "Wait!" He was standing with his back to us, intently regarding five shadowy eucalyptus trees in the parking strip. Their mysterious beauty against the cold blue stars of the Eastern heavens was a miracle to make any man pause. And the deep shadows in the fresh, sweet smelling grass of the narrow parking strip were a memory of illimitable spaces in an infinite sky unvisited by stars. Again that illusive half-memory of forgotten regions swept over me like the starlit billows of a cold sea. What sea I struggled to remember I learned only at the end of our explorations.

"Wait a second," Herron repeated hesitatingly in a low voice strangely unlike his usual assertiveness. "I almost had it then."

The ghost of a breeze stirred in the eucalyptus leaves. Herron gazed up at the trees, listening eagerly to every syllable of the faint, lisping rustle.

"Ah," he exclaimed softly, "it comes back."

He began quoting Rossetti's magical crystallization of the haunting mystery which all of us felt but could not express:

"I have been here before,
But when or how I cannot tell,
I know the grass beyond the door,
The sweet, keen smell,
The sighing sound"

He did not finish the exquisite stanza. Sylvester quoted another fragment,

".....I knew it all of yore;"
and to my surprise Palgrave, who reads little verse, finished:

"Has this been thus before?
And shall not thus time's eddying flight
Still with our lives our love restore
In death's despite,
And day and night yield one delight once more?"

We felt that it was a question and a prophecy. "Come," said Savadan, "you are the men. I too have seen a sudden flash of light. Herron will read the monuments, and I shall learn why I have been sent back

so often and so fruitlessly. I have waited and toiled thirty years for this moment."

"I wish I could remember," Culman muttered, with one last look at the mystery of the Eastern sky.

The door closed softly behind us, shutting out the magic of the stars.

"These are my quarters, gentlemen," said Savadan, turning up the gas. "I regret that I cannot offer you chairs. Our first experiment however can be performed standing."

We took in the bleak attic at a glance. It ran the whole length of the house and made up in airiness what it lacked in comfort. In one corner a pile of trunks and packing cases belonging to the people of the house formed a sort of alcove containing the sum of Savadan's earthly possessions; a narrow canvas cot, one straight-backed chair, a plain deal writing table and half a dozen well-used books. A few feet from the alcove stood an old fashioned cistern, whose continual trickling filled the attic with a faint, musical tinkling. To this day the sound of running water brings back every detail of our first plunge into the unfathomable stream of time.

"The experiment which I propose to try is a very simple one, Culman," Savadan continued. "Nevertheless I think it will whet your appetite for deeper researches. Will you please stand with your back to the light? Sylvester, you will face Culman. The rest of you, Colonel Dill, Beckford, Smith, Palgrave, and Ducasse, will arrange yourselves in a circle about Culman and Sylvester. There is nothing mysterious about the circular order, it is merely to enable us all to get the most of this miserable light."

While we arranged ourselves as he directed, Savadan turned up the jet to its fullest flare.

"That's better," he said, taking his place in the centre of the ring with Culman and Sylvester. "Now, if one of you will lend me his watch, we can go."

"One second," said Culman, handing over his time-piece to Savadan. "Will you first tell us why the running down of Sylvester's watch at Holst's had such a peculiar significance for you?"

"I could readily do so, but it would take too much time just now. Won't you allow me to defer all explanations to a less anxious moment? You see, the whole 'set' or complexion of events indicates the present as an extraordinarily favorable time for our experiment. If we let this slip we may have to wait years before we can break into the stream of events."

"Don't mind Culman," Palgrave advised. "He is just as much of a believer as the rest of us, only he hates to admit the fact. You're still in command, Mr. Savadan. Fire away, and shoot Culman's skepticism out of the back parts of his head."

"Taken by consent," Ducasse muttered. "Hurry up before my other foot goes to sleep."

"Very well," Savadan replied. "I can tell you only this much of what I propose to do. Time, with all of its events, is flowing past us like a mighty river. It has been sweeping through human and prehuman history for ages beyond the powers of man to number. If now one could hurl himself into that stream and swim steadily back against the current, he might see the history of our race speeding past his vision.

"You may compare history to the successive photographs on a moving picture film: the events of human

or other history have left indelible records on what I may call the film of time; run that film backward from the present, and you will see the past restored with all its events in the reverse order. Or if you run it forward from any given epoch, the past will live once more before your eyes precisely as it was. For time is not a thing that once past it is forever perished; time is one and eternal. Past, present, and future are but different aspects—different folds, if you like—of one continuous, unchanging record of everlasting existence. Our memories hint at a shadow of the truth."

CHAPTER II

In the Time Stream

HE paused for a moment, but no one offered any remarks. Little did we dream that only three years later (in 1909), Minkowski would seriously put forward similar views in the name of sober science, and that the 29th of May, 1919, would see the experimental confirmation of even stranger realities concerning the nature of time and space.

"Let us suppose," he went on, "that one has actually projected himself into the stream of time, and that he has made headway against the current into the remote past. To his eyes the goings and comings of the men and women upon the banks of the stream, the colorful reflections of stately cities on its unruffled surface, and the tramp of passing armies long since dissipated into dust by the unaging winds, will all be as vivid and real as what we call the present is to us.

"Yet those men and women on the banks would have been dead and their names, their very nations, forgotten for centuries, and the great cities with all their teeming life and trade, shapeless mounds of grass-grown rubbish for thousands of years.

"Now I have mastered, in ways which I but imperfectly comprehend, this secret of swimming back against the stream of events. It is like swimming in water. Once the knack has been learned it is never forgotten. But to learn it in the first place takes constant practice, and final success comes only in some involuntary twist of the mind or muscles. I am sure of this; nobody ever knows exactly how he first mastered swimming in water, and certainly not even the most expert seers can explain to others the secret of swimming back against the stream of time. In the same way I can not account reasonably for my intuition that all of you are in that delicately balanced mental state between past and future which a trivial accident may upset, plunging you all headlong into the ever moving waters of eternity. . . . Well, Sylvester, at what point shall we enter the stream?"

"Where we can, I suppose. Let us try for the desert of the monuments. Then we may learn who it is that keeps sending you and me back, and why."

"For the desert of the monuments, then. So be it." He held out Culman's watch under the flaring gas jet so that we could plainly see the second hand busily ticking off its round.

"This watch is a mere detail. Any other object which would unite your minds for an instant would serve my purpose equally well. Do you all see the second hand clearly?"

"Yes."

"Then follow it closely. When I say 'Ready,' be pre-

pared to call out the exact second which will be passed over next. When I say 'Go,' name the second being passed over. This is simply to concentrate all of your minds in a certain direction of time. Now, we will have a practice first. This counts for nothing. Ready!"

We craned forward, staring at the watch. It was fifteen minutes past two. The second hand was just starting on a new circuit of its small dial.

"Go!"

"ONE!"

"Very good, gentlemen," said Savadan, evidently real experiment. I shall try to time it so that you will be pleased. "You all got it exactly. Now the next is the call off 'Twenty.' That will make the time fifteen minutes and twenty seconds past two. Ready!"

We bent toward the watch with a tense expectancy, not one of us doubting that we should indeed be rewarded for our open-mindedness. My last clear impression was the look on Ducasse's face. It was a gleam of quiet satisfaction as if he were enjoying secret knowledge newly acquired and not shared by any one in the circle, even by Savadan or Sylvester.

"Go!"

I SEEMED to strangle, fighting for the breath I could not get. Then the floor of the universe gave way and I pitched down into absolute nothing. My bones burst into an intolerable flame and I was utterly consumed. Not a vestige of my flesh or bones survived; not so much as a pinch of ash remained; I was destroyed. The very atoms that had made up the elements of my body perished. They were dissipated like wandering sparks into their primal electricities; these clashed together, positive and negative in a multitude of shocks, nullifying each other in a union of final nothingness. The last sparks of my material existence had been blown out; I was annihilated. My body had been blasted clean out of space and time. Where I had existed there was a void.

Yet something that was not matter remained unchanged. And that residue had an infinite capacity for pain and understanding.

Instantaneously the agonizing destruction was reversed: there was a stirring in the emptiness of space and time; the electrons and protons that were to become my elements were sown like seeds of fire through the black vastnesses of an embryonic universe; ages elapsed in stark flashes of blinding intelligence, and my atoms, recreated, had reunited. Then, with the flaming, instant rush of aeons and the creation of innumerable stars, my body was hurled back into existence.

Was I dead? For centuries, it seemed, I lay motionless, revolving that question in a stunned agony of doubt. The black, starless void of an unknown sky spanned the vastness overhead as with a vault of iron.

I became conscious of my groans. The sound echoing against the iron sky terrified me, and I felt my hold on existence slipping. A second more and I had let go; I was falling sheer down a bottomless abyss. My mind, my life, went out, and I perceived no more

"This place is dead."

It was Herron's mind communicating with my own. No word had been spoken, and I was not reading his mind. Yet I knew that he was beside me in that place, and that his knowledge was mine: the place was dead.

Then Culman's mind groped toward mine in a wan-

dering bewilderment:

"We have been sent back."

"Too far."—Palgrave.

"No."—Sylvester.

"Too far," Palgrave's thought reiterated with a kind of numb fear. "They sent us back too far. Out of space and time. We do not exist. Annihilated. Never get back. Dead for ever."

"Not too far," Savadan's thought felt for our minds with the skill born of long practice. "I have been in this place before. We shall get out. Follow my will."

"What place is this?" I wondered.

"It has no name. Call it the Desert of the Dawn."

"Why? There is no light."

"It is dark now, but the dawn will not fail us. I begin to see. The darkness on my left is giving way. I remember. Before this desert in the region farther back where Dill was sent, all is perpetual night. After this desert, forward in time where the sender is, there is no darkness. We were sent back."

"From where?" several queried.

"From the light, to see its first dawn."

"Is this Desert of the Dawn in the same fold of space and time as the region whence we were sent back? Who remembers?"

It was Palgrave's mind groping for knowledge, and Sylvester answered.

"It is not. Neither in space nor time is it the same. We are in another universe. Why were we sent back? Who remembers?"

"I remember," Herron thought, "but not distinctly. I must read the incised legends on certain monuments. But I have been sent back too far in time; the monuments have not yet been built. I must come again. Feel what we are lying on."

"Dust and fragments of bone," several thought. "All the inhabitants of this place perished ages ago."

"NOT all," Herron thought. "The one who sent us back tells me so. There is a remnant living. They are in the deepest subterranean chambers where there is still air—not here, but on the other side. And they will come to the surface and build the monuments before quitting this place forever. I must come back when they have finished their work and gone on, away from here, out into space in search of a living sphere. This one is dead. I know now why we were sent back."

"Why?"

"Let Palgrave think it. He knows."

"I know," Palgrave thought, "but not clearly. Over the universe that we were sent back from there hovers the shadow of a great fear. Our people in that universe descended from the last of the race on whose bones we have fallen. Our first ancestors were the builders of the monuments. This whole place is a wilderness of death. We were sent back to learn the history of our race—to find out whether there is truth in the dim legends which we have all but forgotten. The monuments will reveal what truth there is. But the legends have been so changed in the wearing down of innumerable ages that I doubt whether we shall recognize them for the same, or understand their meanings when we read them.

"There is one legend of a terrible fall, that sent us back to the beasts. There is another of a great slaughter

when all but a handful of the whole race perished between the rising and the setting of the morning stars.

"We were hurled twice out of space and time to discover what catastrophe made this vast region a desolation of bones and ruin. For the same catastrophe, according to signs which the legends declare to be infallible, is visible in our own near future. Having knowledge, we may avert disaster, shaping the future to our own desires."

"Does knowledge ever deflect the stream of time?" Savadan doubted. "In this dead place I lose all faith."

"We must discover the means," Culman thought. "There is something we were sent back to prevent—some threatened breach of the one law of reason. What was it?"

"A marriage," came Palgrave's answering thought. "There are two people in the universe whence we came who must not marry. For their union will be the first spark of a consuming flame that will sweep us back to universal death. They must obey the law of reason or we shall all perish and our universe become, like this, a wilderness of desolation."

"Can we prevent their union?" Savadan doubted.

"We do not know. We can but tell them what the ancestors of our race were, and what we may again become. Thereafter the decision is theirs, and we must abide by it. For without freedom of the will for all men and women our place would be as dark as this. We can bind no man. No woman shall be coerced into reason. All are free; that is our tradition and our law. We shall take back sure knowledge; that is all."

We lay unthinking for centuries in the thick darkness of the desert. Then suddenly Savadan's mind leapt out to ours with a command:

"On your feet! The dawn is upon us. If it passes us unawakened we shall sleep here forever. Up!"

CHAPTER III

The Desert of Death

WE STRUGGLED to our feet. With dreamlike rapidity the darkness broke down, and the vast heavens quivered and shook with the coming day. We peered into each others' faces. Yes, we were the same men, but changed. There was the light of a new intelligence in our eyes and the wisdom of ages on our features. Then, with an uneasy quickening of the senses we took silent note that Dill, Beckford, and Ducasse were not with us. By some strange twist of the memory we guessed where they were. It was Ducasse, we realized wonderingly, who had sent us back. Dill, we knew, was ages further behind us in the stream of time. Beckford's absence was in some haunting way a mystery. Not until we had twice descended and ascended the stream of ages did we learn the sinister meaning of his absence.

The spot where we stood was some nine or ten thousand feet above the main floor of an all but illimitable desert. As the on-rushing light flung up the details of our surroundings with an impartial, appalling distinctness, we realized the full significance of our first thought that this place was a wilderness of death. The mountain on which we stood was a colossal pile of shattered bones sculptured into craggy ravines, vast cliffs and dizzy precipices by the age-long action of the tempestuous winds which, no doubt, had swept it together in

the first place, heaping it up from the yet vaster deposits of the desert.

With a rush the sun came up over the desert's rim at our left. We watched its leaping rise in a stunned awe. Where had we before seen that flaming giant of a star? It was strange, yet familiar. With astounding speed the vast flame cleared the horizon and blazed over a full quarter of the heavens. Then for the first time we perceived that the disc was not a perfect circle, but an irregular spiral rent and torn into streamers of what appeared to be compact, dazzling fire.

Under the pitiless intensity of that withering light every nakedness of the immeasurable desolation about us leapt into stark horror. We looked down on a perished world from which the last visible life had vanished. Nowhere was there a tree, a patch of grass, a bird or any other moving thing. The very winds had long since expired, for there was no air or other atmosphere in which they might stir. Nor was there a vestige of water; that too had been dissipated and lost in the brazen heavens above us. Only in the deepest abysses there might remain sufficient air and moisture to support a tenuous existence. But of this we saw nothing. The place was dead.

Then with a shock we realized that we too were but shadows of our true selves; our bodies, nay our very minds, were in another place. It was as if we were looking down through thick glass at our dimmed reflections in a mirror beneath the glass.

We stood on the ghastly mountain and watched the progress of the day. Gradually the convincing truth stole from mind to mind as we gazed out over that boundless desolation white with its parched bones in vast mounds and barrows or heaped high in wind-channelled mesas to the farthest limits of vision: it was no natural extinction that the inhabitants of this place had suffered. They had been overwhelmed suddenly in their countless millions, and their dead bodies or shattered bones swept together to moulder in this place.

There was no estimating the number of the slain; the mountain on which we stood alone represented thousands of millions. I stooped down and picked up one of the smaller bones. It crumbled to powder in my fingers. Culman did likewise, holding out the pinch of dust for us to examine in the glaring light.

"This is the record of one legend. No monument is necessary; the traditions are true. War," he thought, and again, "war. This is what we were sent back to see. Who would have believed it true? We have come up to the light from the sheer darkness of an incredible brutality. The legends have not all lied. War."

"Why were we sent back to see this?" Palgrave queried. "Can the telling of this check the marriage we were sent back to prevent?"

"I don't know. But this is war—the beast state of the traditions that we never believed existed. Did we struggle up from this?"

"We must return at once," Savadan warned us. "Take one look at that sun. It will be your last in this universe, for not all of us may come here again to read the monuments that will be built. But we must come again to a place farther forward than this in time. There is one in the secret recesses of our past who knows the mystery of our own suns, which we have forgotten and which we must rediscover."

GAZING intently at the gigantic sun we at last deciphered the riddle of its unfamiliar aspect. It was not a single flaming star, but millions upon millions of them, all clustering thickly together like bees in a swarm. Their packed density made up the deceptive appearance of solid, impenetrable flame. It was, in fact, a vast spiral nebula of innumerable suns.

"We must go back," Savadan counseled; "but how far we must return, I do not know. I seem to remember many lives, two more clearly than the others. I cannot tell to which we shall return. One is immeasurably further down the stream than the other. It was from the first, the nearer life I think that we were sent back. The other, the more remote, is after the universal fall told of in our legends. But those legends must be a second growth. Come, let us go back where and when we can. We have seen the desolation."

"We must return," Palgrave agreed, "although we have learned little. What have we seen to prevent a like ruin overtaking us? We do not know what caused this wilderness."

"War," Culman reiterated. "Remember the legends."

"What caused the war?"

"Beasts. Our traditions bid us never forget the beast."

"But we are not beasts," Palgrave doubted. "That stage of our ascent is a myth. We never were as these bones must have been, when clothed with flesh and foul passions."

"That is why you were sent back," Culman responded. "You have never believed the legends. And the two who must not marry disbelieve all the traditions of our ascent. Unless we can take back, if not now then later, the truth of all our legends, the action of those two will hurl our universe back to this and worse. *They shall not marry; they shall obey the law of reason.* Herron, if we cannot convince them, you must endure the pangs of dissolution alone, and return to read the monuments. Rather than that the like of this shall blight our own place I will labor without ceasing till I find the forgotten secret of destruction, and I will destroy it all."

"TWENTY!"

As the word leapt from our lips we found ourselves straining forward the better to see the watch which Savadan was holding. The second hand was just moving over the twentieth division of its small circle. *We had been out of what we call life less than a second.*

The Colonel removed his glasses and rubbed his eyes with the back of his flabby, white hand.

"Well boys, that's the jolliest nightmare I ever had. Wouldn't have missed it for worlds." He licked his lips, and there was something bestially repulsive in the act. For the instant he was not a human being but an unclean animal. "I fought a battle," he went on, "that would make Armageddon look like a back-alley row between two buck niggahs. The companies were millions and the regiments thousands of millions. And between the rising and the setting of the morning stars I annihilated them to a man. No shot, no shell, no noise—none of that Bull Run fluster and flurry. No, sah! I used a silent weapon, and a deadlier one."

"And you escaped?" Culman asked.

"I was the Commander-in-Chief," he answered proudly. "I was appointed, sah, by the leading citizens of that place to devise ways and means of checking the disastrous increase in population."

"We saw the effects of your fine work," Palgrave remarked drily.

"Too bad we can't hang you," said Herron. "But it would be against military etiquette, I suppose, to scrag a scoundrel for murder committed when this old earth of ours was still part of a white hot nebula. But frankly, Colonel, I wish you had been killed and pitched into Hell."

"How dare you use such language to me, sah? I did my patriotic duty!"

"Shut up, you two fools!" Palgrave shouted. "Perhaps the whole thing was only a dream any way. By the way, Ducasse, where did you hibernate?"

Ducasse grinned devilishly. "Here, of course. Right where you all were."

"You know better than that. Where were you?"

"What, Palgrave! You of all rational beings to suffer a rush of credulity to the brain—it's impossible. Why, man, where is your common sense?"

"I left it under the long table at Holst's—or on the top of a barren mountain of bones. I forget which. Now, no fooling, where were you? That was no dream. It was all as real as this room."

"WELL," Ducasse answered with an unwanted touch of superiority, "since you approach the matter in a becoming spirit of reverence and humility, I don't mind telling you. I was where most of you will find yourselves next time."

"So it was you who sent us back?" Savadan asked.

"Guilty," Ducasse grinned. "You thought you were doing it. But I stuck half way up stream and gave the rest of you special and individual kicks which seem to have sent you considerably farther back. You will understand all these details perfectly the next trip you take. I'm an old hand at the business, but I never got so far back or had so much fun before. Smith grunted like a pig when I sent him off."

"Well, I don't mind so long as I got back. That first kick was excruciating."

"The first always is. You won't notice the next. In fact I shouldn't be surprised if we all walked straight out of this attic into another world."

"I saw nothing," Beckford broke in. He had been following our remarks with a puzzled frown. "Savadan said 'Ready!' and you all leaned forward. Then the instant he said 'Go!' you hit the twenty exactly. That was all there was to it."

"Perhaps you're right and the rest of us wrong," Ducasse answered. "But that won't stop us from going back to find out the first chance we get. Anyhow I'm glad you saw nothing because you'll have a clearer head for my Chinaman's case. Come on and I'll put you to bed."

The Chinaman was the particular bit of prison reform in which Ducasse was interested at the moment. Ducasse claimed that the unfortunate had been "framed" in a tong murder. How inconsequential all this seems now....

The rest of us were yet stunned by the impact of our first plunge against the unknown. We rather hastily took leave of our host without making any appointment for a second experiment. But as events proved an appointment was unnecessary. We had willingly entered the time stream by an exercise of the free mind whose

precise nature none of us understands even now, but no effort of the will power alone can ever lift us wholly clear of the current. Each of us is immersed at least partially for the rest of his thinking existence.

We walked down to Van Ness Avenue and separated in the direction of our several lodgings. Before parting, however, we made arrangements for Sunday. Ducasse exacted a promise from Beckford to go down with him to San José and look into the new evidence in his protégé's case; and Culman said he would go along too for the sake of the trip and the possible apricot blossoms. Culman was still rather subdued. He had not yet decided whether our experience was a dream or a reality. He soon learned.

Palgrave, Sylvester, Herron, and I agreed to catch the one o'clock ferry for Belvedere, planning to spend a lazy afternoon in Cheryl Ainsworth's garden. Sylvester relieved himself of the uncivilized hope that Miss Ainsworth would not be at home, so that we might enjoy the spring beauties of her rare garden undisturbed. Our first glimpse of reality was already fading. We slipped back into our trivial shadows as if they were ourselves.

Our heartless neglect of his comforts deeply shocked and mortified the Colonel. He would have to buy all his own drinks or go without.

"I shall treat myself to a Hammam bath," he announced with dignity, boarding an owl car for his distant lodging.

"Don't do that, Colonel," Palgrave shouted after him, to the amazement and confusion of four belated couples of pre-honeymooners in the car. "You'll sweat out a thousand dollars worth of rye and give all the rubbers the D. T.'s."

As soon as Dill had left us, we again glimpsed the truth. So naturally had the Desert of the Dawn fitted in with our subconscious knowledge that we never once questioned the reality of its existence. Rather, as we parted for the night, we felt that this world is the shadow and the other the solid substance; this life the dimly perceived dream, and the other the vivid reality. We took it as a matter of course that we should again break through the brittle dream into the vaster universe of imperishables.

CHAPTER IV

A Memory of Five Pillars

CHERYL rose from a shady bench beneath a willow tree, now in its freshest spring green, and came down the sloping path toward us. We had been sauntering through that richest part of her garden which she calls the wilderness—a half acre abandoned to the native California shrubs and wild flowers. This April afternoon it was a blaze of golden poppies and tall, sky blue lupines. We were taken somewhat aback, having decided from the shuttered-up house that everybody was away from home.

"This is a rare pleasure, Mr. Sylvester," she said, offering him her hand. "It is not often that you come so far out of your shell as rustic Belvedere."

Sylvester rose nobly to the occasion.

"I had to stay up in the City on business, and the temptation was too much for me when the others said they were coming over. Isn't it a marvellous day?"

"It is indeed. Look at the turquoise of our little bay and the emerald of those hills!"

We stood for some seconds entranced at the ethereal

beauty of the tiny bay lying like a jewel at the bottom of its many-colored cup of steep hills, aflame now with all the glory of California gardens at their brightest.

"The others are farther down the path?" Cheryl asked. There was a poorly dissembled hopefulness in her question.

"We're all, this time," Palgrave answered, without betraying how deeply her disappointment cut him. "Ducasse dragged Beckford and Culman off to San José on some wild goose chase or another. I can assure you they all left swearing—except Ducasse and Culman. It's their party."

Cheryl brightened. When she smiles her magnificent brown eyes light up and the dimple in her chin deepens. Then I can understand why such an exceptionally indifferent man as Palgrave should worship the ground she walks on,—to say nothing of the more susceptible Beckford. Palgrave always made a bad mistake in his dealings with Cheryl, I thought; he never betrayed his adoration.

His keen professional insight into human character should have taught him better; but like most physicians he was helpless in prescribing for his own ailments. Cheryl craved admiration just as does any normal girl in the honesty of her secret heart. And Palgrave seldom gratified her. He seemed to expect her to guess what was in his mind, and Cheryl, not being particularly good at conundrums, took his affectation of coldness at its face value. This was just the last thing that Palgrave intended. It served him right.

"Oh, I'm so disappointed that the others couldn't come," she said, with the fatal directness which is the disconcerting hall mark of a perfectly honest mind.

When she made such uncomplimentary speeches Cheryl had no intention of being rude. She was just straightforward and couldn't help herself. I believe it would have been impossible for her to write "yours sincerely" at the end of a letter unless she meant it. In fact I knew that she used to sign her weekly letters from college to her mother simply "Cheryl," without any of the conventional protestations of affection. For there never was any real bond between the two women after Cheryl grew up. Mrs. Ainsworth had always snubbed her daughter, thinking the girl lacked decisiveness. How utterly mistaken she was, she learned two years before her death.

Cheryl had only one serious defect of character so far as I could see. She was too diffident of her mental powers, which were actually far above the general level of good ability. In spite of her steady and brilliant successes at college, and her subsequent genius as a social organizer, she refused to believe that her mind was anything but mediocre. Her mother's early snubbings had left their lasting impress. Mrs. Ainsworth sneered at all intellectual triumphs, calling them "academic"—I believe she was the first woman in America to use that damnable word as a slur on things which lay thousands of miles beyond the reach of her feeble, commonplace mind.

Like so many of her rank and comfortable station who have never been forced to fight for the luxuries that are their bread and meat, she firmly believed that a good mind is a handicap in life, and that the greatest prizes are forced on well groomed cabbages in faultless collars. So Mrs. Ainsworth sniffed at all of her daugh-

ter's little triumphs as pretty baubles signifying nothing of value.

WHEN Cheryl graduated from the university she had it out with her mother. She declared her intention of doing something to make department store clerks, men and women, realize their potential strength and get decent working conditions through organization. Mrs. Ainsworth dismissed the ambition with a contemptuous smile.

"You refuse me leave?" Cheryl demanded.

"Certainly I forbid you making a spectacle of yourself. Besides, what do you know of social work?"

It was one of Mrs. Ainsworth's pathetic delusions that her own inspiring paperlets before the Oakland Social Service Club materially advanced the well-being of the downtrodden shop girl. Perhaps they did; conditions were infinitely worse in her ancient day than they are now, and even the most inane vaporings may have dispelled some of the more noxious gases by a sort of spiritual displacement.

"You refuse," Cheryl replied. "A direct answer is something. Thank you. Mr. Close will call on you tomorrow to wind up the estate."

"What estate? Are you insane?"

"Father's estate. I am quite sane, and I am of age. I demand my share of the estate which was left to me in my father's will. There is no use mincing words. We never have got on together. I intend to leave you before both of our dispositions are ruined for life. There is plenty for both of us—even for you with your present extravagance. And to be frank, I see no reason why you should spend my income for me. Nor do I admit that any human being has a moral right to direct the life of another. What right you had was purely legal, and that ceased when I came of age. I intend to live my own life, and I will leave you to live yours. Mr. Close will call in the morning. Good bye."

But Cheryl did not escape immediately. Mrs. Ainsworth lost her temper and gained nothing by the indiscretion. Mr. Close called the next day. Within a week the property was divided, and Cheryl established as a cash girl at four dollars a week in San Francisco's largest department store. When Palgrave learned the details of the break he congratulated her sincerely.

"What experience I have had with children," he said, "shows me that you have done the rational thing. I am a thorough believer in what old Plato advocated: children should be brought up by scientifically trained professionals and see as little as possible—nothing, for preference—of their parents. You cannot discharge an incompetent, bad-tempered, or brutal parent under the present regime. But in Plato's republic any nurse could be fired the instant he or she gave signs that nervous exhaustion or general brainlessness was taking itself out on the kids and ruining their dispositions. Mother love, as you have just found out, is largely a pious myth. It was devised to keep women contented with their unnecessary drudgeries.

"I do not mean to say," he hastily qualified his assertion, seeing the shocked look in her face, "that the real mother love does not exist. It does, and—pardon me—that's the very hell of it. In my work I curse it fifty times a day. For what amount of blind affection can ever undo the deformities conceived in folly and

born in ignorance? In the perfect state that Socrates and Plato dreamed of we shall tincture our love with a little reason.

"That is what I am slaving for, but the end is hundreds of generations ahead of me. Even the stupidest conservative admits nowadays that the proper rearing of children is as difficult a science as the training of race horses. And no owner of a stable that I ever heard of was confiding enough to leave the development of fast trotters to the parental affection of their dams and sires. You have entered the race late, Cheryl, and you must be your own trainer. Go on and win!"

What Cheryl accomplished in her social work may seem precious little in our own busy days when all conditions of employment are changing so rapidly. But she was one of the pioneers, and it is the pathfinders who count. Having first roused the dispirited workers to an uneasy discontent, she turned their awakened energies to constructive work. At first employers hated and feared her. But as they learned the elementary truth that contented employees mean bigger returns on capital invested, they not only tolerated her persistent interferences, but paid handsomely for her expert services.

Always before recommending a change that seemed radical at the time, she made sure of all her facts and figures on both the employers' and the workers' sides. Then she stuck to her point with a pertinacity that nothing under the high heavens could budge. When the delegates from one side or the other worked themselves into a frothy, profane rage at her obstinacy, she would quietly gather up her papers and leave, with the remark that the next meeting would be held when they had recovered their tempers.

There was lots of force in Cheryl. Her beauty, too, smoothed over many of the rougher places. For only a blind dyspeptic in the last stages of nonagenarian senility can be persistently boorish to a beautiful young woman in her early twenties.

So when Cheryl expressed her disappointment that Beckford had not come with us—for that was what she meant—we accepted the Dutch compliment with a resigned grace as just another evidence of Cheryl's uncomfortable honesty, and settled down to make the best of a rather chilly welcome.

She would have out presently, we knew from past experience. Then everything would be perfect, even for me. Cheryl never liked me very well, having a strange aversion to my trade of analytical chemist. The reason for this I learned only in the real life, of which this is the deceptive shadow. Cheryl's memory was better than mine, although she was never aware of the superiority.

"Are the yellow Japanese irises out yet?" Palgrave asked, as if yellow irises were his one desire on that serene April afternoon.

"Yes, and you must see them. Down by the five pillars they are a perfect dazzle. They have never been so brilliant as this spring."

"The five pillars!" What reminiscences of another world did Cheryl's words recall? Again I had a gleam of mystic knowledge, but it vanished in a flash. A strange filmy look passed over Herron's eyes, as if he were drowsy with trying to remember; and Sylvester gazed absently out at the tranquil sky over the shimmering bay.

"Come on, you fellows," Palgrave called back over his shoulder. "This is a free show."

We followed Cheryl and Palgrave down the path to the five white marble pillars at the foot of the wilderness. We had often been there before, but those were not the five pillars which I was striving to remember.

"I almost went back again just now when Cheryl spoke," Herron whispered. "Did either of you feel anything queer?"

I nodded. Sylvester stared hard at the back of Cheryl's head. She was wearing no hat or other covering.

"She has magnificent hair," he said irrelevantly. "The real, dry, wavy black. I have only once seen such a splendid head before. It was in —." He stopped, unable, apparently, to finish his sentence.

"Where?" Herron asked curiously.

"That is what I was trying to recall while she was speaking. It wasn't in this world."

Cheryl was confiding something to Palgrave in a low voice. Once or twice he laughed rather nervously and began speaking in an undertone of great earnestness. Presently a sharp turn in the path brought us out by the five marble pillars. Cheryl had not exaggerated; the yellow irises were a glory.

"I say, Sylvester," Palgrave began when we came up with them, "Cheryl has been telling me all sorts of disturbing things. She has been overworking I suppose. Anyhow she has been seeing spooks."

CHERYL reached up and put her fingers over his lips.

"Don't tell them," she begged. "They will only laugh at me."

"Oh no they won't. Even Chemical Smith is quite civilized when you get him away from his test tubes and scarlet messes. And as for Sylvester, spooks are his pet hobby. I'll back him to lay the grisliest of them with a mathematical formula. Herron, of course, is hopeless, but we always kick him when he doesn't behave. So you need not be afraid of being ignorantly jeered at. They all know better."

Sylvester looked so hard at her that she flushed slightly and averted her eyes.

"What did you see?" he asked.

"Well, since you know the disgraceful fact that I saw something that wasn't there, Mr. Sylvester, you may as well have the harrowing details. It wasn't a ghost or anything outlandish of that impossible sort. I prefer to think it was a perfectly natural mirage. In fact it did look something like a clear reflection on an unruffled lake or swiftly flowing but glassy river."

"The stream of time," Sylvester murmured.

"What did you say?"

"I beg your pardon, Miss Ainsworth. I was just thinking aloud. It was nothing. Please go on."

"You weren't laughing at me?"

"Far from it! This is serious."

"All right, then," she laughed. "Yesterday morning at about eleven o'clock I had to go out to Van Ness Avenue to look after some property. I own eight houses, you know, on the side toward the bay. One of my tenants had been complaining that the plumbing is out of order, and I went to inspect for myself. I wanted a walk, so I took a Market Street car and got off at the corner. My houses are on the bay side of the street,

but I walked up along the other to see how my property looked—whether it needed repainting or anything.

"For two blocks or so I became interested in watching the people on my own side of the street, and forgot to look across. When at last I did I nearly fainted. The whole bay side of the street was a blackened waste of charred sticks. Not a single house was standing. There were a few brick chimneys still upright, but the most had fallen.

"Then I noticed that I could distinctly see the clock on the Ferry Building at the foot of Market Street. Of course that was only another hallucination. Half San Francisco lay between me and the clock. But such trifles don't stop dreams. There were no buildings between me and the clock, only a few blackened and fire-gutted skeletons. So far as I could tell the entire business district of the City was burnt to the ground. Then I looked at the houses on the side of the street where I was walking. They were unharmed except for heat blisters all over the paint."

"What did you do?" Sylvester asked.

"Collapsed in a nice old gentleman's arms. When I came back—I was gone only for a moment—everything was natural again. But I swear the thing was no dream. It was real."

"It must have been a dream," Herron objected lamely. "We walked home that way this morning, and there was no sign of a fire. And as for the business district being wiped out, there has been no bad fire in the City since about two months ago, when that place next to the Winchester Hotel went up. Leave it to old Chief Sullivan—he could put Hades itself if they'd give him two buckets of water."

Cheryl looked disconcerted but obstinate.

"I don't care how you explain it away. That was a real thing."

"Did you back your opinion financially?" Sylvester asked. He was perfectly grave.

"Yes," she admitted, after a defiant glance at Palgrave. "Just like a woman," he murmured, and Cheryl flushed dangerously.

"How did you back your dream?" I hastily interposed to divert the threatened hurricane.

BY taking out all the extra fire insurance my eight houses would carry. I hailed a passing auto and made the man take me as fast as he could to Montgomery Street. There I called on Mr. Thompson, the manager of the London company that has been handling my business, and told him what I had seen. He laughed and asked me to go out to lunch with him. I gave him no peace until four hours later when I had what I wanted. He had to stretch all the rules to the breaking to put my business through in that time, but I kept at him."

"You are nothing if not persistent," Palgrave sighed, as if the knowledge pained him deeply. As a matter of fact he admired nothing so much as a woman with a mind of her own.

"Did you tell anyone else?" Herron asked. He also was quite grave now.

"I did. As Mr. Thompson and I made the rounds of my houses, I told all my tenants and urged them to take out insurance on their goods and put their valuables in some class A fireproof vault."

"How did they receive it?" I asked. She flushed, and hesitated before answering.

"Well, some of them thought it was a new scheme for advertising insurance. They congratulated Mr. Thompson on having roped me in as an agent, but said it was just a bit too raw to work. The rest stared, and kept a good six feet away from me. I did my best. If they lose all their treasures it won't be any fault of mine. One woman said she would move. She disliked having an insane landlady."

"Did you drop it after that?" I asked. She was evidently keeping something back from a sense of pride.

"I've told you so much I may as well give you the rest. I rang up the editorial offices of the *Call*, the *Bulletin*, the *Chronicle*, the *Star* and the *Examiner*. In a few words I gave each office the main points of the story and asked them to feature it."

"What did they say?"

"With one exception they agreed that it would make an interesting story of the dream sort, but declined to touch it because 'it might give the City a black eye in the East. We don't want to advertise that San Francisco is three quarters inflammable shacks.' I'll leave you to guess which office was the exception. It won't take much of an effort. Some drunken beast at the other end of the line—I almost smelt his boozy breath at my own—told me to 'run along, dearie, and try high-balls instead of cocktails.'"

"I shall make it a point to go round tomorrow and paste him on the jaw," Herron announced. "I know who it was. He always calls anything in a skirt 'dearie.'"

"Thank you, Mr. Herron," said Cheryl. "I don't care if you give him a black eye as well."

"Cheryl, Cheryl," said Palgrave sadly. "You are becoming quite Roman in your bloodthirsty brutality. You should turn the other ear. Let me feel your pulse."

She offered a wrist. "It's as steady and normal as your own," she laughed.

"More so, more so," he admitted with a sigh of the blackest melancholy. "My own is going something over two hundred this instant."

She blushed, but Palgrave showed no disposition to relinquish her hand until he had completed a rigorous scientific examination.

"Smith," said Sylvester, "you know where the best magnolias are? I mean the white."

"I know," Herron volunteered. "They're up at the other end. Come on."

We turned to make our escape. I stepped on a dry twig. It snapped with a faint sharp click—the exact sound that Sylvester's watch had made when he broke the mainspring. Instantly I felt the solid ground give way beneath my feet. I was slipping back into the stream of ages. By the amazed pain on their faces I knew that Herron, Palgrave, and Sylvester were also losing their grip on this world. In an instant we had all four plunged, clear through and out of this universe.

I recognized my surroundings at a glance. There, in the lucid heavens, were the five pillars of my remembered existence. This universe was indeed the reality, the place I had quitted was the dream. Those five pillars of clear light in the sky were the infrangible supports of a firmament which I had always known to be unchanging and eternal.

CHAPTER V

The Secret of the Suns

FOR the instant I remembered nothing of this life. My existence as a chemist in San Francisco was clean forgotten. But my recent experiences on the Desert of the Dawn were still distressingly vivid. That was but natural. For I had looked but recently into the still, white faces of my sleeping companions. They had not yet returned to life; all the sender's efforts to recall them from the Desert had so far been in vain. This had been the sender's greatest venture.

Many times had he tried to send Savadan back alone, and later Sylvester and Savadan together. But he had succeeded only in awakening in them hideous dreams of another existence which knew nothing of the legends and the monuments which they had been sent back to decipher.

Then seven of us had volunteered to go back together, incited to the venture by Savadan, who declared that his troubled memory of that false life seemed to predict that we—Herron in particular—were the men fitted by nature to swim against the stream of time and read the past on its banks. My own return from that perilous journey had been swift and safe. The others still slept.

Presently, however, a haunting uneasiness that I had been absent elsewhere, in what place or time I could not remember, made me scan the heavens anxiously to verify my bearings.

Yes, I thought, the five superb suns were indeed there as I had always known them: the clear green sun that our people call the star of hope; the bright red, the golden yellow, the cool amethyst star and the pure white were in their accustomed regions of the sky where we had known them all our lives, and by tradition for ages. And I remembered the immemorial legend which declared that the life of the five suns is coeval with the life of our race: Their rising was the earliest memory of our people in Eos; their departures from our sky will be the doom of our race. Their positions had not changed in my absence—if indeed I had ever been away.

"I wonder why they call this the Plain of the Five Pillars?"

It was Cheryl speaking, or the one that was Cheryl in that other place—the place of pain and forgotten immortality. She and I were sitting in the shade of a gigantic tree not far from the Council Chambers. From its lowest branches to its tapered spire the tree was one flame of scarlet blossoms. One had fallen on her head, and I thought how beautifully it enhanced the blackness of her hair.

"Look up," I replied. "There's the answer for all to read."

"Surely the name has nothing to do with those five streamers of light from the suns? They do look like pillars, I'll grant, the amethyst and green ones most of all. But they rest on the sky—see, yonder, where they end—not on this plain."

"Perhaps," I answered. "But there is a tradition that those five pillars of light begin somewhere on this plain and end up there at the suns."

"The traditions!" she exclaimed scornfully, tossing her splendid head. The scarlet flower fell from her hair to the grass, and she brushed it petulantly aside. "How

tired I am of all our senseless traditions and meaningless legends."

"You are no wearier of them than I am. But are you sure they are all without meaning?"

"Yes," she answered decisively.

"What makes you so sure? The Council would gladly, to a man, go down to the everlasting sleep could it assure Eos that its traditions are lies and its legends dreams. How do you know so positively that there is no truth in them?"

"My love tells me so!"

"You may be right, and all the rest of us are wrong. But what you call your love is a new thing in Eos. Or perhaps it is a very ancient thing for which we have another name."

She flushed angrily. Our talk was to end as usual—in a violent quarrel. But I could not help it and I did not greatly care. The possible happiness of all our myriads was more to me than the pretty whims of this petulant girl, charming though she was.

"YOU mean?" she encouraged defiantly.

"Unreason. Madness. Burning, ruinous folly. That is what your love is. Crass, obstinate selfishness, if you like."

"Stop! You are blaspheming against the highest sacredness of life."

"The sacredness of life? What are you thinking of? The only sanctities of our race are the laws of reason and freedom. Have you stumbled upon another?"

"I have, and a greater than either. Love!"

"Mad selfishness—that is what you have found. You would stride over the one law of reason which our traditions warn us must never be transgressed."

"The traditions again. Are we always to live in the shadow of the past, never to advance into the free light beyond?"

"You may step beyond the shadow. None of us can forbid you. The second sanctity of our race as you well know makes us all free. None shall compel obedience from another. Service to the laws of reason must be offered freely or not at all. So you should for once be grateful to the traditions. You shall have what you want if you insist."

"Then why do you and all the rest of the Council persecute me? Why cannot you grant my lover and me the right of union instead of hounding us to steal it?"

"If you wish the right, take it. We shall not stop you."

She sprang to her feet, white with passion. I rose slowly and faced her.

"You will drive us to it and then hold us up to scorn. Is that your freedom?"

"It is not. Nor is your love our reason. We have no wish to persecute any living creature. We have measured every line, searched every record, analyzed every act of your lover's ancestors and of your own a thousand times, in the hope that we might find some combination of traits that does not, by every law of reason, absolutely forbid the marriage of you two. But science cannot lie, and the records persist in predicting inevitable disaster from your union."

"I do not believe in your analysis! What is science? Who knows whether its predictions in any one case will be verified? My love tells me that I have a truer guide

than the surest science. I will be free and follow my love."

"You believe in nothing. So be it. We compel assent from none."

I turned to go back to the Council. My mission had been fruitless. She put out a hand appealingly on my arm.

"You will help me?"

"Of course. Whether would please the Council better than to discover that all our fears are imaginary. Do you think we enjoy thwarting you? Or perhaps you fancy it is a pleasant thing for some of us to plunge into the stream of ages and risk the annihilation of our minds?"

"Is it then so dangerous?"

"It seems to be. Seven of us were sent back, and so far I am the only one that has returned. The others are still lying dead in the Chamber of the Serpent."

"What did you see?" she asked, morbidly curious.

"An illimitable wilderness of desolation."

"And that was all? If you saw no more than that I cannot see why the traditions should ban my love."

"It was not all. The wilderness was a waste of bones. All the inhabitants of that vast place had perished suddenly in some universal cataclysm. What we saw was the visible evidence of our darkest tradition. The red legend of merciless war is not a myth."

"But what has my love to do with war? Love is the gift and promise of peace!"

"I do not know. But if the others return safely they may be able to tell us. If they awake as ignorant as I am, then we must all be sent back again. For we must unravel the legends or perish. That we know."

"You will find no reason against my love. For reason and love go hand in hand, only I am the first of all our race to see the truth. Therefore I am persecuted."

"Will you promise me that if we do find the indisputable truth of the legends, you will be guided by what they teach?"

"Is that what the Council sent you out here to ask me?"

"Yes."

"You don't know what you ask."

"We do, or we should not ask it. Will you obey the legends if we discover their true meanings?"

Cheryl never answered that question. We heard a stealthy scuffling behind us, and turned round just in time to see a curly-headed youngster—not yet much beyond the talking age—scuttling away into the tall grasses. He evidently was doing something that violated his code of ethics.

"Come here," Cheryl called softly. "I won't take it away from you. Come and let us see what you've found."

He emerged obediently from his hiding place, his hands behind his back and a smile of utter joy trying not to show itself on his composed features.

"Let us see," Cheryl begged. "We won't rob you."

BUT he wasn't going to abandon all caution merely because a pretty woman entreated him in a soft, appealing voice. He walked past us with dignity at a safe distance. Just as he drew opposite, he thrust out one arm toward us with a magnificent gesture of pride. Tightly clutched in his small fist was a wriggling four-legged, scaly monster which he had dragged from its oozy bed. He was off with a chuckle as fast as his legs

could carry him, hugging his precious reptile to his naked stomach.

"Will it hurt him?" Cheryl asked, looking longingly after his twinkling feet.

"No, that kind is quite harmless."

"I wish he was mine," she sighed.

"I wish he was yours too."

"What do you mean?"

"That small lover of reptiles will never bring ruin on Eos when he reaches manhood. His record is clean for a thousand generations."

With that I left her in a speechless passion and made my way back to the Council chambers.

As I entered the long Chamber of the Serpent I saw my companions of our desperate journey still lying white and rigid on their benches. The death of these men, I thought in a sudden flush of anger, would be on Cheryl's head. But for her selfishness they need never have been sent back. And the lives of at least three of these men were priceless.

My name, of course, and the names of all those whom I have met in our two lives were different in Eos from what they are in this shadow of a life where I am now writing. I remember them distinctly. But for simplicity I shall retain the names by which we are known here,—wherever "here" may be. Our physical appearances, too, were greatly altered. There each of us had a heightened vitality, sharply real to the minutest detail; here our bodies seem dulled, and all our movements mechanical and unintelligent. Here we are but dead automata; there we knew the meaning of free will.

Ducasse was going from one sleeper to another trying vainly to bring them back. He glanced up and saw me.

"What did she say?" he asked.

"Nothing new. She will not promise to follow the truth we find."

"Well, she has our law on her side. We can't force her. I wonder what the man thinks about it all. Is he merely a compliant fool, or is he mad too?"

"He doesn't seem to count for much. Perhaps she is keeping him in reserve to use later in the final examination before the Council. What have you been doing?"

"Trying to bring these men back, and thinking."

"Rather unusual sport for you," I laughed. Ducasse pressed never to think, modestly declaring that he reached all of his profound judgments on the Council by a sort of digestive reflex action.

"When I do think," he retorted, "something happens."

"Have you puzzled out what one of the legends means?"

"Almost. Our Tail Devourer is connected in some way with our five suns."

CHAPTER VI "The Whole is One"

THE TAIL DEVOURER is the Council's name for the serpent which occurs in so many of our legends. I looked up at the frieze of the ancient chamber, and once more studied the design upon which I had expended so much of my labor in unavailing efforts to unravel its meaning. The pure form of the design, and that which was represented in this historical Chamber of the Serpent, was a snake bent round in the form of a perfect circle, the tail in the mouth, embracing the motto

THE WHOLE IS ONE.

This, repeated at regular intervals, made up the complete design in its purest form. Naturally I was greatly interested in Ducasse's assertion that he had some new light on this hardest of all our inherited riddles.

"Have you something different," I asked eagerly, "from the physical theory that makes the serpent represent the continual transformations of matter into energy and energy back into matter? That means something definite at least. Our very existence depends upon our knowledge of how to control the transformation. And I can easily imagine that when our ancestors first found the secret they celebrated by symbolizing it in a form that is not likely to be forgotten."

"Unless we had the secret of transformation our whole place in the universe would have ceased to exist ages ago. The very atoms of this Plain of the Five Pillars would aeons ago have been broken down into their elemental electricities and been dissipated into free space, perhaps utterly annihilated by subsequent unions of equal positives and negatives. But our knowledge enables us to keep the total amounts of matter and energy constant in our own part of the universe. Our place is eternal. Without power over the transformation we should now be as dead as the Desert of The Dawn."

"So our ancestors were certainly entitled to perpetuate their discovery in any way they chose. That they selected the highly appropriate design of the endless serpent is a testimonial to their fine sense of the artistic fitness of things. I'm for the physical explanation."

"It is reasonable," he admitted. "And therefore I suspect it. Whenever you find a perfectly reasonable explanation of anything in nature or human conduct, look for something else. Things in the real universe don't all fit together like the pieces of a child's puzzle."

"Now look at your nice, orderly theory of the Tail Devourer for instance," he continued. "The first builders of our present civilization were advanced enough to tap the inexhaustible sources of heat, electricity, and radiant energy of the ultimate particles in every handful of the most worthless rubbish. That much everyone admits. The very first intelligent beings in Eos had full possession of this knowledge. Every legend, every tradition confirms the fact."

"Now I maintain that if they were so far advanced when they arrived here, they probably looked upon the process of tapping the energy just as we do—an obvious commonplace of nature. It is a trick that once learned could never be forgotten."

"On the other hand, the secret of navigating space between the stars, and passing from one region of the universe to another, is a thing of a far higher order. We ourselves have not yet mastered the art, and most of the scientists doubt whether we ever shall. Yet, again by every tradition and legend, it was by such means and no other that the first intelligent life came to Eos. To beings possessed of this knowledge the transformation of matter into energy and back again would be a trivial commonplace. So why should they take any pains to commemorate it in an unforgettable design for their descendants?"

"And another puzzle—to which I see no hint of a solution—why should they have striven so successfully to obliterate all traces of their knowledge of navigating inter-stellar space? The legends tell us that in twelve

generations the secret was stamped out and completely, irrevocably forgotten. They meant their descendants to stay in this place forever. I feel that if we can discover why they intended us never to leave Eos, we shall at the same time unravel the whole tangled mass of all our legends and traditions."

"YOU are right," I agreed. "No intelligent people would ever take so much trouble to perpetuate a commonplace that a child might rediscover for himself. For it is clear, as you say, that whoever the founders of our civilization were, they reached Eos full grown in intelligence. All the legends insist upon that fact. There was no gradual ascent here through ages of blind groping. Our race arrived here in the first flush of its maturity. What is your theory of the Tail Devourer?"

"It is not all clear yet," he confessed, "but I see this much. First, our ancestors meant something infinitely more subtle than the unity of matter and energy when they wrote *The Whole is One* within the serpent-ring."

"Second, the serpent motto is always repeated, in every version of the legends, at the beginning and the end of the brief fragment which is all that remains of the Legend of the Five Suns. All that has been preserved of the sun legend is the bare statement: '*When ruin threatens Eos, discover the secret of the Five Suns which shine over the Plain of the Five Pillars. By that secret shall you avert the ruin which overwhelmed our people in the Dark Place. Use the secret; it is the better thing.*' This, as you know, is always preceded and followed by the motto: '*Remember the Serpent; the Whole is One.*'"

"Perhaps that is all they meant us to know. The fragment of the Sun legend which we have may be all of it; for there obviously is a veiled warning that the secret is to be used only in the direst extremity. So they put difficulties in the way of complete knowledge."

"Now, in piecing all these things together, as the authors of our legends intended, I believe I have found a clue that will lead us to the cure for Cheryl's madness even if it runs the full course to ruin."

"What is your clue?" I asked doubtfully. To me it seemed a foregone conclusion that nothing, not even the destruction of all Eos, could shake Cheryl's obstinacy.

"First," he replied, "we must discover what our remote ancestors meant by the 'Secret of the Five Suns.' Second, I am convinced that the discovery turns upon the correct interpretation of the serpent with its inscribed motto *The Whole is One*, and this I believe I have found."

"The serpent does not typify matter being eternally transformed into energy and energy into matter. No, it is a symbol for the whole of time, past, present, and future; and the legend makers meant us to know their secret that time is one and closed. I feel certain they did not visualize the stream of time as we do—a river flowing through infinity without once retracing its course. They thought of time as flowing in a circle, so that if one were to project himself into the stream in the direction of the past, and swim back against the current, he must eventually come back to the present, having traversed in his course the future as well as the past."

"Third, we can only discover the secret of the suns

by going back into the past and observing its reflections in the stream of time where it was first imagined. We have lost all other traces of its meaning; the permanent record of its beginning in time alone remains."

"Fourth, the closed, circular nature of the time stream is a danger we did not suspect when we undertook to send messengers back against the current into the past. For suppose it is but a comparatively short distance in time from our present existence to the forgotten origin of the Sun secret. Then it will be a practically infinite distance from us round the circle in the other direction—through the future—to the place where the image of the secret is."

"What if I have made a mistake in the process, and have tried to bring these men back, not by the shortest way, but the longest? It was this danger, I am convinced, that the legend makers meant to warn us against with their motto that *The Whole is One*. For we are plainly told that our last hope of safety lies in discovering the secret of the Suns, and our only chance of doing so is to ascend the stream of time."

"Suppose that I actually have been trying to bring these men back to life by the longest way. The chances in that event are that they will never awaken. The process is very delicate. The slightest excess of effort might upset the balance at any point of the time stream, sending them backward into the past or forward into the future independently of my will."

"Perhaps that is the true explanation of my repeated failures with Sylvester and Savadan. I was unable to send them back to the right era in time because in spite of all my efforts they lost their balance in mid stream and drifted into the future instead of the past. That would account, for instance, for all of Savadan's wild stories of a sort of beast-existence that he has discovered, also for Sylvester's persistent confirmation of that impossible state."

"BUT we got one practical result out of all Savadan's theories: he stuck to it that some memory from that beast-existence pointed you out as the men most likely to succeed in swimming against the time current. If they wake up, we may be able to prove his theory. If they don't, well, it will not matter."

"It is an uncomfortable thought," I remarked. "You are always thinking of some wretched mental dried pea like that to plague us with. And now that you mention it, something of that sort must have happened in my own case. I have a very dim residual memory of some third life—not our actual life here in Eos, and certainly not my brief existence on the Desert of the Dawn—but of another much more varied experience. That life can only be in the future."

"Do you recall any details of it?" he asked, giving me a curious look. It flashed across my mind that Ducasse himself had been with me in the future life. I boldly taxed him with concealing his knowledge. He laughed, and shook his head, remarking that he was one of those individuals who disbelieve in telling others everything they know."

"Go ahead with your account," he urged. "Do you, as I asked before, remember any details of this shadow life of the future?"

"One, and that only in a blurred way. In the future

life beyond Eos the people have an unshakable belief in some terrible downfall of their race that hurled them back to the most primitive state of nature. The legend, as I remember it, concerns an ideal existence in a garden from which the race was expelled at the fall. Or perhaps more accurately, I recall a singular feature of the legend: the expulsion did not affect a whole race, but only two people, a man and a woman.

"This may only be the legendary way of symbolizing the downfall of the entire race. Anyway, in the fall, they lost their former mastery over matter and energy, and became instead the most abject slaves of nature, having even to sweat their very lives out to force sufficient food from the soil for their barest existence.

"Now my theory is that this legend of those people in the future concerns Eos. The 'fall' of their traditions is the impending ruin which all our legends warn us against, and which by those same legends is now imminent.

"To account for the utter degradation of the future race, it is only necessary to assume that in some way our downfall dragged along with it the loss of our knowledge of the process for transformation of matter into energy. That alone would account for all their fierce struggle to feed and clothe their bodies. Without our knowledge life would be an intolerable burden. Who would carry it under the lashes of a supremely powerful and tyrannical brute nature? I wouldn't. Our subjugation of the forces of nature is the one thing that makes existence bearable."

"You're a cheerful prophet," he laughed. "According to you we are bound for ruin no matter what happens. You may as well go out now and give Cheryl the Council's good wishes for a happy and prolific marriage."

"Not at all. I am still dazed from the shock of being sent back. The whole future life which I imagine I dimly remember may be a myth. Most likely it is my disordered interpretation of something quite different which I actually did see but cannot yet recall undistorted. It seems incredible that such a state of bestial degradation could succeed us. And in any case we do not know enough about the time stream, or the process of ascending it, to base reliable predictions on these few experiments. The whole thing is too dangerous and uncertain for rational use. I wish we had let it alone."

"So do I," he admitted with a rueful glance at the white, sleeping forms. "Still, what could we do? By all the legends Cheryl's intended act is the first spark of the flame that threatens our universal destruction. We had no choice but to discover the exact truth of our traditions and the meaning of their symbolism. There was no other way. We had to send someone back into the past. All tangible records disintegrated ages ago."

"Well," I said, turning to go back to my laboratory, "you are not to blame whatever happens. They all volunteered when Savadan insisted that he had seen them elsewhere on his own journey, and that they were the right men for the venture."

"Yes, but they thought that I was more expert at sending than I appear to be. It isn't for lack of preparation that I have failed. No man could have studied the process more diligently than I have What are you up to?"

"I'm going into my laboratory to check over Cheryl's records and her lover's charts for the last three thousand generations to see if there isn't some path of escape that we have missed. I promised to help her in what she calls her love."

"You can't. Her total chart and the man's are absolutely exclusive. Too many of the best workers have checked them over. There is no possibility of an error solving our difficulties. We've got to decipher the legends and act by them."

"You're the pessimist now. We're a pair."

"Of truth-lovers," he called after me with a dry laugh. "Pessimist is only another name for one who sees things as they are."

He was always saying things he did not mean.

CHAPTER VII

"Remember the Beast"

IN sick helplessness I pushed away the records of Cheryl and her lover. Ducasse was right. Sheerly incompatible for three thousand generations, they were mutually exclusive and irreconcilable by any law of science. Further back than the three thousand generations it was unnecessary to go. Every known law made it certain that deeper search would reveal nothing contradictory to the later records. And our laws in this branch of science at least were complete and unassailable.

This last check but reconfirmed my own previous calculations and the minute analyses of a hundred more expert workers. For when Cheryl's madness first possessed her, we thought at once that there must have been some error in the customary verification of the ten preceding generations. It is seldom indeed that our work is more than a perfunctory matter of routine; long ages of rational selection have left their mark, and a woman's natural, unguided choice of her lover and future husband is almost invariably right and unobjectionable to the strictest demands of science.

But from the first Cheryl's case amazed us. Not one of her ten nearest generations gave a favorable reaction with her lover's, and we suspected an imperfection of the plates. Yet the further back we pushed our researches the more impossible her proposed union became; his life and character were sheerly incommensurable with hers.

I rose with a sigh; we must disentangle the legends and if possible convince Cheryl of their truth. After that her acts would be in her own hands. Our authority over any man or woman in Eos was purely advisory. Not one of our traditions sanctioned compulsion or restraint, no matter how reasonable it might appear on the surface. For every tradition that we respect holds freedom to be the supreme good, and the limitation of any individual's free will an intolerable evil. "Rather than admit the thin edge of tyranny," ran the saying, "invite swift ruin."

I called a passing assistant and handed him back the thin metal strips engraved with their thousands of close, sharp lines which were the impassable bars of reason separating Cheryl from her chosen lover. The assistant took the strips with a sullen frown to return them to their proper vaults.

"Well," he demanded, "have you found one line of hers that falls anywhere near one of his?"

He was an old man, severely scientific and harshly unsympathetic. The one passion of his long career had been a fierce devotion to the subtleties of the exact analysis of intelligent lives. The cold detachment of his lifelong pursuit had at last chilled out the faintest spark of a once kindly nature.

"No," I admitted. "It is the most exclusive pair of records I have ever examined. Each by itself is a full, rich, normal harmony. When superimposed they make an incredibly hideous discord. And the worst of it is that I can convince neither the man nor the woman that the analysis gives, by millions of chances to one, a true prediction of what their offspring will be.

"By himself the man might have listened to reason. At the beginning he could easily have been persuaded to take any one of a hundred women in his own rank of age and intelligence whose records harmonize perfectly with his. But since she has had her unleashed way with him he raves of 'untrammelled love' as insanely as she in her wildest moods. They are planning, I believe, as soon as their own union is publicly known, to start a campaign throughout the length and breadth of Eos for 'Love in Freedom and Freedom in Love'."

"Which means," said the old assistant bitterly, "I suppose, that hereafter the young men and women of Eos are to mate promiscuously without our certificate of a rational and harmonious union?"

"Undoubtedly it will mean just that. But I think Cheryl's passion for unreason will meet with a cold reception. Not yet are our people abandoned to a belief in selfish folly as a more reasonable guide than sane, gentle science. For who can deny that as things now are there is ample freedom within the law of reason? Our rare ban on an intended marriage may even more rarely cause some over-eager man or woman a passing discontent. But never yet have I heard of one falling sick under the temporary disappointment. Marriage after all is such a minor event in the lives of a healthy, well-born people whose minds are kept full, that a change of intended mates causes no lasting inconvenience.

"ONLY in this case, for the first time of which we have record, there seems to be something abnormal in both the man and the woman. Neither will listen to argument, both flout the law of reason, and each has an outspoken contempt for all the surest findings of our science. I am afraid we shall have to endure their campaign for 'Love in Freedom and Freedom in Love' to its foolish end."

"If we do," he sighed, "we shall probably remember the beast with a vengeance."

"How so?"

For answer he pointed to the deep-cut inscriptions in the solid metal of the walls, the brief summary of another of our legends, which ran,

"Remember the Beast."

"We are admonished to remember the beast. And why should those who knew the secrets of nature have been at such trouble to engrave the warning here, not once but hundreds of thousands of times, in this most refractory of all metals, unless they intended us to associate the fabled beast-state of the oldest traditions with

our peculiar work in this laboratory of life analysis and character dissection?

"Must not all the laborious precautions of our analysis, which time has worn down to a perfunctory routine, be directed against a recurrence of the beast-state from which these legends declare our race evolved? 'Remember the Beast.' Well, this woman and her lover will be the first of all our happy race to forget. May they find a stranger happiness in their folly, and may I not live to taste the bitter fruit of their mad union!"

He peered at the metal strips lying in the hollow of his right hand—Cheryl's fateful record and her lover's. The younger workers in this vast laboratory joked that the old man had analyzed so many records that he could read one with his naked eyes. This of course was impossible. Nevertheless for the instant I fancied it might be true as I watched the fretful lines deepen on the poor old man's forehead. He was hurt as well as impatient; all his careful, disinterested work was being thrown contemptuously aside by a headstrong girl.

"Cheer up," I said. "When the sleepers return they will bring back the meanings of all our riddles, and we shall see what to do. If the truth of the legends sharply divides the happiness of all Eos from what this wilful girl calls her love, I feel sure she will choose the reasonable path and abandon her foolish lover. We cannot mend what isn't broken. Let us wait until the law is trampled in the mire before we abandon all hope."

"Yes," he said, turning to go about his business, "let us wait until the law is broken. Then I for one will tarry no longer. When the law of reason is mocked and set aside I will end my life."

I did not try to call him back. Despair as deep as his is not easily lightened, and an unselfish grief is inconsolable.

I was about to return to Ducasse to see if by chance I might help him with the sleepers, when the two metal strips in the old man's hand struck sharply together with a faint click. The slight sound impinging on my consciousness let in a sudden flood of light which as suddenly was swallowed up in total darkness. Where, I struggled to recall, had I heard that characteristic sound before? With haunting insistency the sound seemed to bring back some forgotten detail of my recent plunge into the unfathomable past.

I stood there perfectly still, staring unseeingly at the reiterated legend on the metal walls. "Remember the Beast, Remember the Beast," I read mechanically. But the dull exercise did not help me to recall where I had first heard that elusive, metallic click. Then by one of those inexplicable twists of the mind which seem to be independent of our wills, I remembered in a flash.

The sound had been like the sharp, explosive tick which a living spark emits as it is ejected from a glowing brand. That link completed the chain; and lucky that it did so, otherwise my sleeping companions might never have returned to life and Eos. I remembered: I had first heard that identical metallic click while watching the brilliant points of light thrown off from the great central ball of incandescent minerals which, by the incessant breaking down of its matter into energy, supplies Eos with its main fountains of heat, light, electricity, and hard radiations for the maintenance of life.

THE recreation of my working time came welling back to my mind in a rush of memories. For often, when unable to make progress with some difficulty in my laborious analysis, I would steal away to watch the great central ball in the Chamber of Undying Fire. It was an amusement that never staled, and I fear that the Council was charged for much of my time before the ball which might have been more profitably employed.

However, as I shall relate, my stolen pleasure was not all a dead loss, for it undoubtedly was responsible for the cue which brought back the sleepers. Often had I watched the huge, scintillating ball in fascination, lost in wonder that this single source of energy was ample to supply the major needs of all our millions.

And as I had watched, listening in curious expectancy for the rare, faint clicks which signified that some transient imperfection of our controlling process had suddenly released a minute spark of the incandescent matter with explosive violence, I had often dreamed that nothing in life or death could obliterate the memory of that peculiar, distinctive sound. This, I had imagined, must be a sound heard only in Eos where all our life hangs on the perfect, steady operation of that incandescent globe. I should remember the quality of that sound in the deepest death.

Then an inspiration seized me. Surely if anything could recall the sleepers, it would be the faint, infinitely penetrating sharpness of that very sound.

Hastily summoning a dozen assistants on my way I hurried back to the Chamber of the Serpent.

CHAPTER VIII

"They Must Not Marry"

"I DON'T put much confidence in your suggestion," Ducasse remarked pessimistically. "When the ball clicks we shall see whether your theory is good for anything. If these men wake, you're right; if they sleep through eternity, you're wrong. What gave you the idea?"

"It is hard to say," I admitted. "But I believe it was your suggestion that the endless serpent signifies a possible closed, circular stream of all time. That, acting on some very faint impression of my own plunge into the time stream, suggested that we bring the sleepers in here to the Chamber of Undying Fire, and expose them to the occasional peculiar clicking sound of the ball."

"What particular impression of your plunge do you mean?"

"The one I tried to tell you about in the Chamber of the Serpent. I am beginning to see into, and accept, your theory of the Serpent. The time stream is undoubtedly closed. And your guess that we may have drifted at least a little way into the future, instead of swimming straight back into the past as you intended, certainly seems more and more reasonable. In no other way can I account for the smoky confusion of two distinct memories in my mind at this moment. One is very sharp and clear, every detail of our comparatively short stay on the Desert of the Dawn stands out nakedly. And there is no doubt that the Desert was in the past not the future. Its least detail is minutely confirmed by our oldest legends.

"But the other memory, the one which I cannot recall,

has nothing in common with any of our traditions. Of this I feel certain. My experiences in that part of my swim in the time stream must have been wholly in the future.

"The one incident that comes back at all clearly is mysterious enough, if you like, but it is by no means incapable of explanation. On our common theory that time is like a river flowing forever in one direction, nobody could account for my experience. But on your theory of the closed, circular stream, it becomes quite simple. Indeed it is obvious."

"Of course it yields to a natural explanation," Ducasse agreed, looking like a wise and sleepy bird. "Things always happen as they should when I put my wits to them. But what, exactly, is this unique incident of your swim into the future?"

"Simply this. During my sojourn in the future I lived a long and varied experience. I grew from infancy to manhood. So, I think, did the others whom you sent back; but on this I am not quite clear. Yet, through all that life I had occasional dulled flashes of memory relating to Eos. I was never wholly satisfied that my life was more than a vivid dream. Nor is this remarkable, for that is exactly what it was, or I should not now be sitting here by the great ball of undying fire talking to you.

"Now the peculiar incident that stands out fairly sharply is the memory of a certain sound. In some way that I cannot now remember, that sound started me back up the stream to the present, and I arrived finally in Eos whence I had started. It comes back to me that some or all of the others, and perhaps you too, although you won't admit it, were with me at the time, and that they also heard the same sound.

"But whether they too recovered their sense of direction in time, and started with me back to Eos, I am unable to recall. In fact I am almost sure that I heard that characteristic sharp click more than once. And I have a dim recollection of parting from the others on one of these occasions, and swimming back alone to Eos. Probably the others became confused in their sense of direction in time, and continued to live in the shadow-life of the future for a long stretch of the time stream, perhaps occasionally drifting out of it under your influence, and swimming back into the past of our legends."

"If so," he said, "we shall learn the truth we are after when they wake—if ever they do. And your theory is that the ticking of the ball will penetrate even this sleep?"

"Precisely. If a similar clicking sound was enough to turn me about in mid stream and head me safely for Eos, the real sharp tick itself should pierce through to whatever spark of consciousness these men still retain. For they obviously are not yet dead."

"WELL," he agreed with a sigh, "it is our last hope. I have done everything I know to bring them back. Why doesn't the ball send off a spark? Surely it is time for one. But we probably would only hear those on our own side, and not very far away at that."

"You can't tell when a spark is going to flash off. Sometimes two or three break off almost together, and then again you may watch here till you go to sleep and not see or hear a single spark."

"Always when you want an accident to happen things go on with the most exasperating regularity. If the ball doesn't click soon, these men will be dead. Look at Culman."

Indeed the faces of the sleepers were ghastly in their transparent, waxlike pallor. Culman's was the most distressing in the fierce blue-white glare of the huge incandescent globe. Although his features never once quivered or gave any other sign of life, his whole face expressed the intensest mental suffering. Sylvester, apparently dead, lay serenely indifferent to the terrible light. He seemed almost to be at peace with eternity. Savadan, much older than all but Dill, lay quietly, blandly impassive. There was a look of strong confidence about his closed eyes and set lips, as if he were still leading my companions unscathed through the dangers of oblivion.

Only Palgrave's unemotional countenance retained any shadow of its living expression. A faint sneer lingered on the still, white lips, and a supercilious arch on the brows. I fancied that he might even now be seeing in another existence the actual unrolling of the dramas of all our legends whose truth he had been sent back to verify. For he would not believe their truth, I thought, even if he should behold them with his own naked mind. He had always doubted; and in this semi-death his doubt still hardened his cold, intellectual features.

Dill's expression puzzled me. He had a glutton look, as of one who has partaken to excess of a too-rich food. His dreams, I imagined, were wholly pleasing to him. But the uncompromising glare from the great ball gave his deathlike sleep an inexpressible aspect of low animalism. The light seemed to have died out of his mind, leaving only the rank darkness of a primitive sensuality. He had become a beast.

With an involuntary shudder I turned from studying the repulsiveness of his coarse, full features to Herron's troubled frown. Every frozen line of the younger face indicated the severest mental struggle. If Herron were indeed still living, and thinking in the time stream, his mind was grappling with some tremendous problem. I imagined as I watched his still face that for an instant the rigid tension of his mind relaxed. I at once called Ducasse's attention to the change, real or fancied. Ducasse bent over the stiff form and carefully rolled back one eyelid. He peered long into the dilated pupil.

"A mere twist would bring him back now," he sighed. "Why doesn't he follow my will and turn this way?"

"Perhaps his work is not yet finished," I suggested.

"Or he may be searching for the others to bring them back too. Just now when his face seemed to change I fancied that he had found the key to the inscriptions on the monuments."

"He does have a look of satisfaction," Ducasse agreed, "as if he had just broken through some insuperable obstacle. Perhaps he is at this very instant deciphering what the legend makers wrote before they came to Eos. I feel more hopeful."

He sat down with a sigh of relief. "Let us wait in patience till the ball clicks," he said. "We can't hurry it, nor can I bring these men back against their wills."

We resigned ourselves to our vigil, he in philosophic calm, I in nervous eagerness for the faint, ticking sound which I felt sure would recall our sleeping companions

to Eos and intelligence. I confess that for me the watch was not without its pleasant side. The great incandescent globe had always exercised a strange fascination over me, and now I abandoned myself to the luxury of following its dazzling scintillations to my heart's content.

The ball rested on a metal platform, flush with the floor, of the same refractory material as that of which the walls and roof in the main life-analysis laboratory were constructed. Although dazzlingly incandescent, the ball was colder than ice, its rays not being "stepped down"—as the engineers expressed it—to heat waves until actually required in that form of energy. In the same way neither were the original radiations at this main source transformed into light, electrical or hard energy immediately, but were transmitted unchanged to the several subcentral distributing stations throughout all Eos.

To safeguard the engineers and other attendants against the injurious waves which the ball emitted along with the beneficial, the entire globe had long since been enclosed in a high cylindrical wall, open at the top to the sky, of the transparent ray-filter material, so that the workers might watch and control the transforming process with impunity.

ONCE, out of curiosity, I had called together a full corps of assistants from the life-analysis laboratory to measure the circumference of the ball. It needed almost the full corps to perform the feat. The protective cylinder just grazed the ball at its closest approach high above the metal platform, so we got a very exact estimate by measuring the circumference of the cylinder. I asked the men to stand close against the cylinder and stretch out their arms to the fullest extent upon it, so that each man's finger tips just touched his neighbor's on both sides.

It took nine thousand, nine hundred and fifteen men to girdle the cylinder. For the sake of round numbers I called this ninety-nine hundred double arm spans; and I confess without shame that the mere thought of that number, and the mental contemplation of the vast, incandescent sphere which it measured, lightened for me many a dreary session of the Council. They all knew my hobby and tolerated my childish eccentricity with a good-humored forbearance.

"Well," Ducasse said in his dry way, breaking in on the luxury of my wonder, "at it again? You're just like a child with a new toy. Every time you come near this ball you have a worse attack than the time before. Your elaborate explanation of why you made me drag these poor fellows in here to get the next click won't stand. You did it because you wanted a feeble excuse to neglect your analysis and watch the undying fire."

"What if I did?" I retorted. "As you said in the Chamber of the Serpent, the whole thing is commonplace enough. But that doesn't make it any the less wonderful. For so is the life of plants and animals a common thing; yet not even you with all your superior boredom profess to see nothing marvelous in the secret of life. Now, for all your superiority, I'll wager that if you had not been taught the mystery of this ball, and how simply it transforms the rare handfuls of matter we add to it perpetually into energy and back again into new matter, you never could discover the secret for yourself."

"Suppose you had never been shown the infinite simplicity of how it is done. And on top of that imagine yourself to be suddenly set down in all the glory of your ignorance on some utterly barbarous planet out in space, where either there is no intelligent life or it is just starting on the long climb to reason. How far would you get with making another ball like this? Not far. I doubt if you would even reach the stage of being able to make a respectable mud pie. You would be reduced to grubbing roots and devouring raw vermin for a living, and that would take all your time.

"There would be no leisure in which you might begin to civilize your environment. No; your surroundings would barbarize you and absorb every shred of your mentality. You would have to *live*, man; you could not begin to *think*. In fact you would be just like those miserable wretches described in the 'Legend of the Fall' that I seemed to have discovered somewhere in the dim, depressing future of the time stream. You would shiver to death if you did not first starve."

He laughed at my earnestness. It was a favorite diversion with certain of the younger Councillors to start me off on what, to irritate me, they called "the marvel of the commonplace, the mystery of the undying fire." But this time there was a new quality in his mirth, and I paused in my enthusiastic denunciation of his assumed boredom at the obvious.

"Have you been thinking again?" I asked anxiously.

"No, merely digesting as usual."

"Well, what have you assimilated? Anything new?"

"Marvels. I am growing positively obese with traditional wisdom. I've digested another of the legends. And this time it isn't a snake." He passed one long, lean hand gently over his mid region. "I believe I have swallowed our Five Suns," he announced with an air of pride.

"Are you sure? If you can unravel them we have everything."

"I'm not positive," he said judiciously, trying hard to look modest as he would have liked to have felt. "But from the peculiar sensation of intellectual warmth, I think it must be the Legend of the Five Suns that I've digested. And it has to do with your precious toy."

He nodded toward the huge incandescent globe with a well studied indifference.

"After all," he went on, "I'm coming round to your view. That great bubble of light may not be so innocently trivial as we imagined. Perhaps there is more in it than strikes the unaided eye. How many times have you sat here looking at it?"

"I don't know. Probably four or five thousand. Why?"

"It just shows the utter futility of staring, uncritical, childlike wonder."

I rose up to smite him, but he dodged and eluded justice.

"Sit at my feet," he counselled, "and learn wisdom. This is the first time that I have ever really looked at your marvellous globe of fire. Yet I can truthfully say that I have seen it, which is more than you can claim. All those times that you sat here wondering at the incandescent mystery of the thing, you saw absolutely nothing."

CHAPTER IX

Ducasse Explains

HIS air of judicial superiority nettled me, the more so as I began to suspect that it might be founded on fact.

"What haven't I seen?" I demanded.

"Have you ever looked up toward the top of your ball?"

"Of course. Hundreds of times."

"And you noticed nothing remarkable?"

"Only what you are looking at now," I retorted. "There is not a thing to be seen except the complicated machinery of the selecting and condensing lenses, rather indistinctly, all of it, owing to its great height above us. There is nothing remarkable about any of that. The lenses I know from repeated inspections at close quarters are of the ordinary kind for gathering up the radiations from the ball into their proper foci. And the condensers too are quite ordinary. Nor is there anything unusual about all that tangle of coils up there for giving the proper curvature to the radiations so that they can be transmitted directly to the main distributing and transforming stations all over Eos. Now, you must admit that I have seen everything of importance, and that there is nothing out of the ordinary about it."

"Yes," he persisted, "but how is all that knotted and twisted mass of machinery arranged? That's the essential point."

"On the stone roof, around the top rim of the cylindrical ray-shields of course, as it should be. Where would you have put it?"

"Just where it is. The arrangement is excellently practical," he agreed. "It enables the engineers to climb all through the complicated machines if the parts need adjusting, without getting into the dangerous main stream of rays shooting straight up the cylinder from the surface of the globe. The selecting lenses alone project into the straight volley of rays, and they do all the dangerous work that is necessary."

"Then what else is there to see?"

"Look just a little higher. Do you notice nothing peculiar?"

"No, and neither do you." I was beginning to suspect him of an unkind hoax at the expense of my poor hobby.

"That is where you wonder-loving observers fail," he laughed. "You see all the pretty things and stop before you have really looked at anything. Now I'm just fastidious enough to care nothing about the marvels. The vast size of this eternally incandescent globe doesn't impress me in the least. Nor does the fact that it supports all of Eos in luxury without undue labor cause my heart to miss a single beat. But the astounding detail that our infinitely painstaking, legend-loving ancestors forgot to finish the roof of this imposing Chamber of the Undying Fire fills me with a new respect for the elaborate diversity of their ingenious methods."

"Why is not the roof finished? Only the circular section directly over the ball is left open to the sky as it should be."

"Ah, that's just it. Why should it be left open to the sky?"

"For several obvious reasons," I replied. "First, so

that the transmitting coils can have the proper free range for sending out their various radiations. Second, because if the stone roof had been completed, and carried clear over the open circular skylight above the ball, the perpetual volley of, 'hard' rays from the globe must in time have rotted the stone, causing the whole roof to collapse and wreck the all essential machinery. Do you wish any more reasons?"

"Two are enough. And as it happens they are too many, because both are immaterial. Why did not our legend-making ancestors cover up that huge, gaping hole with this same metal that they used for the platform of the ball? It does not decay under the incessant bombardment of the intensest radiations from the globe. They used it not only for the walls of your laboratory, but for the roof as well. Then why not here? It's a clue, I tell you, man! Suppose they had used this metal to roof over that circular hole. All the selective ray lenses could easily have been constructed so that only they were in the main stream of radiation; and the rest of the transmitting machines could then have been most conveniently assembled on the roof. It would have been an even more practical arrangement than the present.

"NO," HE continued, "that circular hole was not an oversight. It was planned deliberately, as one very essential detail of an elaborate, purposeful design."

"And what was the nature of their design, if you know so much about our legend-makers? You might have been one of them, the assured way you talk."

"Fortunately I wasn't. It is so much more interesting to tease out other men's secret motives than it is to manufacture riddles whose answers one knows in advance. Now, before making you a present of my latest germ of a theory, I must ask you to look once more at the top of your precious globe of fire. Take a good, far look this time, and see if you notice anything you never saw before."

I swallowed what was left of my pride and did as he directed. Yet I could discover nothing that I had not seen and admired hundreds of times before. The circular skylight above the globe let in a magnificent view of our five suns and their columnar streamers of colored light which we call the Five Pillars.

"Except that our five suns are directly over the incandescent globe," I reported at length, "I see nothing. And probably our ancestors chose this spot for the emplacement of the globe on purpose. For what, to a fully intelligent race laying the very cornerstone of all their future life and civilization, could have been a more appropriate location for that cornerstone than this central position directly beneath those five superb suns? Even you, unsentimental as you profess to be, must admit that the unique beauty of the spot would have had an irresistible attraction for their first great venture in Eos."

"You begin to see," he admitted with a dry laugh. Then his whole manner changed, and he spoke with a sure, rapid eagerness. "I have not, perhaps, grasped the secret of the Suns in its entirety. But I hold an infallible clue to that secret in the hollow of my mind; the mystery is potentially solved. What makes me so confident of this I cannot explain. Nevertheless I am certain that my guess will ultimately lead us to the whole truth, and perhaps, if Cheryl's madness proves incurable, save

Eos from becoming a second and ghastlier Desert of the Dawn.

"Now, just listen again for a moment to the bare fragment which is all that has come down to us of the Legend of the Five Suns:

"When ruin threatens Eos, discover the secret of the Five Suns which shine over the Plain of the Five Pillars. By that secret you shall avert the ruin which overwhelmed our people in the Dark Place. Use the secret; it is the better way."

"Observe first, in this Legend, that the Five Suns are definitely associated with this central region of Eos which we have always called the Plain of the Five Pillars. And recall too that there has been a clear tradition from the dawn of our Eosian civilization that those five streamers of light which begin at the suns and rest their bases apparently on the sky, in reality have their origin somewhere on this Plain of the Five Pillars.

"Consider this next: what if those pillars of light actually do originate on this great central plain? They are known to be columns of some sort of radiation whose precise nature we have never been able to analyze. Might it not be that those five pillars of radiation are of such a nature that they are invisible in a gas as dense as our atmosphere, but reveal their hidden color the instant they pass out of our screening air and begin to traverse free, all but empty space? We have numerous instances of such rays—or similar ones—in every physical laboratory. Innumerable kinds of rays only reveal their presence to the unaided eye when they pass through the extremely attenuated atmosphere of a vacuum chamber.

"Again, glance for an instant at the commonest characteristic of almost any pencil of rays from radiant matter such as this huge incandescent globe. What would you say it is?"

"Why, that the radiation is never all of one kind. It can be split up, by many devices, into hundreds of different varieties distinguished among other things by their different wavelengths and intensities. One of the most usual ways of separating out the several radiations is, of course, by subjecting the whole original radiation to the action of an intense but constantly varying magnetic field."

"JUST so," he assented. "And that commonplace of our everyday scientific technique has given me the long sought clue to the secret of our five suns. Those five pillars of light are nothing else than the five broken pencils of rays into which some one thicker pencil has been split up by the selective action of the different magnetic fields which we know are created by the individual suns. In fact, as every scientific engineer will tell you, the same thing would happen for any living star, for each of them is nothing less than a huge natural magnet surrounded by an intense field of magnetic force.

"So it seems obvious that those five so-called pillars are the visible pencils of radiation into which some vastly intenser stream of radiation has been selectively divided by the differing magnetic actions of our five suns.

"The next and last link in the chain of evidence is the discovery of the most probable pencil of radiation that has been split up. Where does it originate? Putting

all things together—the intelligently designed location of this ball exactly beneath the suns, the purposely incompletely roof with its open circular skylight, and the fact that we have never been able to analyze fully either the rays which make up these five pillars or the main pencil of radiations which shoot up from this ball, straight through the skylight toward the magnetic field surrounding the five suns—combining all these details, we cannot escape their obvious consequence.

"Those five pillars are the subsidiary pencils of rays into which the main, analyzed radiation of this incandescent globe is split by the differing magnetic fields created by our five suns. And to unravel the 'Secret of the Suns', and possibly thereby save Eos from ruin, we must analyze to its last ray this physical connection between our suns and this central ball of undying fire.

"There is one other singular detail about our suns that now strikes me like a blow on the head. It has always puzzled me; in the light of my theory it becomes of transcendent importance. To the unthinking, casual observer our suns are wholly ornamental, serving no useful purpose whatever. Eos has no need for either their heat or their light. Since the beginning of our life in Eos we have always created all the heat and light which we need for the maintenance of all animal and vegetable life. So far as necessity goes, those suns could vanish from our sky this instant, and we should never miss them—except for their lost beauty.

"But were the legend-makers who founded our civilization so trivially minded that they would have been to all this trouble of correctly planning the ball so that its main radiation should reach the suns directly, if they had no ulterior design behind all their labor?"

"Obviously not," I replied. "If we can trust the legends, the founders of our Eosian civilization were further advanced intellectually than we ourselves."

"That settles it. The suns are being kept there in our sky for some long-forgotten purpose of the first importance to the future of Eos. They control its destiny—or rather they shall. Of that I feel certain."

"But how 'kept there'?"

"They and we revolve as one, do we not? The five suns do not rise and set, but remain stationary in the heavens, always exactly above this globe of fire, where they have been since the beginning of our Eosian civilization.

"Now," he went on eagerly, "our full knowledge of other systems of stars and their attendant planets shows us that in this respect we are unique. The suns of other planets rise and set; our system swings round in space as one rigid whole. It is as if Eos were connected with its five suns by an unyielding rod of some perfectly inelastic material. This surely is no accident of blind nature. Again I suspect intelligent design. And if we can penetrate the secret of the connection between Eos and its five suns, I feel sure we shall at the same time unravel all our legends in one quick twist."

"How?" I demanded.

BECAUSE, as I maintain, all our legends are tied up with the unaccountable truth that our ancestors deliberately stamped out their secret knowledge of the method of navigating interstellar space and passing freely from one system of suns and planets to another. They

meant us, their descendants, to stay in Eos to the end of eternity, or, failing that, to perish here."

"Well, we may fool them yet," I interposed hopefully.

"That is exactly what I am driving at," he exclaimed. "For the secret of freely traversing interstellar space must clearly depend on a complete knowledge of the nature of gravitation and all its properties. And what is the mysterious connection between Eos and its five suns but a controlled gravitational effect of some unknown kind? It can be nothing else. Only an intelligently directed force of attraction—a completely subjugated gravity, in short—could hold those suns immovable above this plain for all these ages.

"By unravelling the mystery of our suns, therefore, we shall undoubtedly blunder onto the long sought, elusive secret of what gravitation is and how to control it for our own uses. And if we do thus discover the grand secret, we shall be as our ancestors were. All space will be ours to explore at pleasure. Then we shall escape whatever ruin it is that the legends hint is about to overtake us.

"For by the time the ruin arrives we shall have migrated to a more stable planet. I for one," he concluded with a wry smile, "shall not be sorry to go. I have seen all that Eos has to offer in the way of marvels—even this precious ball of yours—and I long for something new and sensational. And," he laughed, "we shall leave Cheryl and her lover behind when we move, so that they may enjoy each other's society undisturbed by our pestiferous Council. That, I think, will cure both of them."

"Ducasse," I said, unable to contain my sincere admiration, "you should think oftener. If this brilliant theory is the result of simple reflex digestion—as you claim—you should be able to get the secret of gravitation at a single thought. Try it now!"

"No," he answered modestly. "My head is philosophical, not physical. I can only think of things that other people should do." He nodded toward the white, sleeping forms of Culman and Sylvester. "If anyone can solve this all important puzzle, those two are the men. Culman's mechanical genius has never been equaled in the history of Eos; and Sylvester's physical imagination is a marvel that we have never seen the like of. If the riddle is to be answered at all, those men will find its true meaning. I merely sit and digest, thinking a new thought now and then for others to shape into being. And the tragedy of it all is that neither of those men may ever return to Eos. What fools we were to send them back."

"Listen!" I cried, springing to my feet. "The ball clicked!"

"I heard nothing," he said doubtfully. "Are you sure? It must have been on the other side, if at all."

We stood facing the scintillating sphere of undying fire, our hair almost touching the protective ray screen, listening intently. Then suddenly, without any warning, a splendid eruption of dazzling sparks burst from that part of the incandescent surface of the ball which was directly before our eyes. The rapid volley of faint, metallic clicks accompanying the miniature explosion was of a strangely penetrating quality, and for the instant I reeled in a sudden faintness. An agonized groan behind us steadied my brain and I turned round.

Culman was sitting up on his bench, ghastly as one risen from the dead, his face on his arms. He groaned again.

"The legends are true," he whispered. "War. We have seen the truth. Horror, beasts, war, truth."

Ducasse bent over him. "Lie down again till you get your senses back fully," he ordered. "Don't try to tell us anything yet."

Sylvester stirred. Then he too sat up, but said nothing. He bowed his head on his knees and seemed to sleep.

Savadan rose suddenly from his bench and walked toward the ball, staring wide-eyed at its glowing surface with a new knowledge. He seemed to be weighing the consequences of two equally terrible alternatives in a horror-stricken doubt. Evidently he was not yet free of the time stream. We left him in peace with his doubt to recover by himself.

Then Herron rolled over, sighed, opened his eyes, and smiled at Ducasse. He was quite normal.

"I have decorated the monuments," he said.

"Good. But don't talk yet."

Palgrave awoke next. He also recovered almost immediately.

"I believe now," he said. That was all.

Dill was the last to emerge from the time stream. He sat up, and turned unaided on his bench, resting his bare feet on the cold metal platform. He said nothing. His look was still glugged. His eyes were drowsy and lethal, as if he had seen much death.

Culman again sat up. He began speaking rationally but in a voice of utter despair.

"Call in the mad woman and her man," he said. "Call them in. Let them hear. We have brought back all the truth. Our legends have not lied. Let the woman and her man see what we have seen. They must not marry."

"They must not marry," Sylvester repeated.

"They must not marry," Palgrave echoed.

"Bring them in," Culman ordered. "Now. Do not delay."

"You had better go and fetch them," Ducasse advised, turning to me. "I must stay with these men to see that they don't slip back again. Order the Council assembled as you go. We will meet in your laboratory. It is best to get this thing over and done with."

I turned to go in search of Cheryl and her lover. Just as my eyes left the glowing ball I saw a single, dazzling spark ejected, and heard the sharp click. I staggered. The metal beneath my feet gave way, and I flung my arms about Ducasse to save myself.

"Hold me back," I gasped. "I'm slipping into the stream. Hold fast, hold—"

I had plunged.

CHAPTER X

Shadows

"WHAT makes you look so strange? I have spoken to you twice, and you did not answer."

Cheryl was gazing into Palgrave's filmed eyes with a piqued wonder. Suddenly his eyes became bright and startled. She rather brusquely withdrew her wrist from his fingers.

"Did you see something?" she persisted. "A mirage like mine?"

"Yes—no!" he replied hesitatingly. "I am very sorry Cheryl," he went on contritely. "Pardon my rudeness

in not answering when you spoke. But I thought—"

"What?" she prompted.

"Really it is nothing," he said evasively.

"Are you ill?" she asked anxiously.

"No, no. Just a touch of vertigo. It doesn't amount to anything. I'm quite over it now."

Sylvester, Herron, and I remembered that we were going to look for white magnolias. We recovered just enough common sense to make our escape unobserved, before Cheryl's curiosity might cause her to look from Palgrave's expression to ours. How utterly unreal it all was in this breezy April garden with its massed blue lupines and yellow poppies. And there were white magnolias, we remembered, at the far upper end of Cheryl's dreamlike garden. . . . We were going to see them. . . . Surely it was all part of some absurd but not unpleasant dream. . . . We stumbled away up the path without a word.

Far below us the little bay of Belvedere shimmered like an opal in its jade setting. But it was all unreal, like the dimmed reflection of some distant scene on a window pane. This place did not exist. It was a dream; and like the brilliant images of those trees, and the bright transparencies of that swiftly moving water, we too were but shadows.

We flung ourselves down on the gently sloping lawn under the white magnolias. We slept, I think, for a few moments. Then Sylvester rose to his feet, and reaching up, drew down one of the lower branches heavy with its large white blossoms. He smelt the flowers, touched them, and released the branch.

"They are 'such stuff as dreams are made of,'" he said. Then with a puzzled frown he regarded Herron's still drowsy head. "Whose words were those I used just now?" he asked. "They described the truth of those flowers. But the words were not mine, nor do they belong to our real life. They are like the blossoms they describe—unreal too. They must be part of this dream. Whose were they?"

"The words were written by a man called Shakespeare. He is part of the dream. All the shadows in this fold of time know and quote his works. He is a poet."

"I knew the words were part of the dream," Sylvester answered; "but these unreal blossoms made me think of them, and I could not help what I said. Where is Palgrave?"

"With Cheryl," I told him.

"That can't be. Palgrave is here with us in this dream. We just left him somewhere. Cheryl is in Eos."

"No," I corrected him. "Cheryl is in this dream too. And she has slept here longer than we, so long in fact that she has lost all memory of Eos. We have been back many times, but she has never returned. She has lost her sense of direction."

"And we were sent into the time stream to learn something about her future," Herron added. "What was it?"

"To prevent her marriage," Sylvester answered. "That is all I remember now. This dream is fast becoming vivid, and I am losing all recollection of Eos."

"And I too," Herron said.

"We must get back to the Council chambers before we forget the way forever," I advised. "Eos is becoming as shadowy as a cloud."

"Let us get Palgrave and return at once," Sylvester suggested.

"He does not know the way any better than we do," I objected. "We must find Savadan. He is our best guide."

"Where is he?" Sylvester asked.

"We lost him," Herron answered doubtfully, "on the Desert of the Dawn. No. . . . We have been with him since we stood watching the rise of that spiral swarm of dying suns. I begin to remember seeing him somewhere after the Desert. It must have been in the life of this dream. Then we all seemed to go back again together, further into the past of the legends. Smith, you were not with us."

"I was in Eos. You and the others were still dead. Only I had returned."

"Did you see Savadan?"

"Yes, but he was asleep. I think he awoke just before I plunged back into the time stream. But I am not sure. It is all getting cloudy again. This life is becoming too sharp. Let us find Palgrave at once. Perhaps he knows where Savadan is."

AGAIN we dozed for a few moments. We all three awoke together with a start. Palgrave was standing in the shade of a magnolia branch, looking down at us. On his face was the saddest expression I have ever seen, even in this shadow existence where half the people are miserable all their lives.

"I have asked Cheryl to marry me," he said, "and she has refused."

"Why?" Sylvester asked.

"Because I love her."

"I did not mean that. Why did she refuse?"

"God knows," he answered.

"Poor Cheryl," said Herron. "She can't see her own happiness."

"You and she were made for one another, if ever a man and woman were," Sylvester went on; "and she has rejected you. Love is blind."

"That is another of their cruel sayings in this place of evil dreams," Herron remarked dispassionately. "It appears to be true. But Cheryl is blind in the other place, so it is but natural. Perhaps our natures are unchangeable throughout eternity. . . . Let us find Savadan and go back before we forget everything but this mockery of a life."

We started down the long, steep path to the little pier. Far out in the sunlit bay the white ferry boat was rapidly approaching Belvedere, a long streak of greenish foam in its wake.

"That is the way back," said Herron. "Not to Eos, but to the place in this shadow life where we left Savadan."

"Yes," Palgrave agreed, and fell silent for several moments. None of us spoke until Palgrave again referred to Cheryl.

"Without conceit, but in the fuller knowledge of all our lives which we have gained today at such risk, I say now that she has trampled on her happiness. I know the man she thinks she loves. He is decent all through and gentle with women. And I know that she will be happy, after the common fashion, if she marries him."

"But though they live together and are kind to each other all their lives, she will never learn from him what

love is. For he does not know. And she, like all who mistake the fragrance for the fruit, will never dream of the sweetness she has missed. So after all she will have a shadow of happiness. And that perhaps is all that any woman ever gains in this cold shadow of a life."

"What will she do with her happiness in the real life?" Sylvester asked.

"What she thinks best," Palgrave answered. "She is honest. She deceives nobody, not even herself. For she is too candid to look through the husk of things to see what they are. She sees life as it tries to be seen, not as we ought to force it to be for our own happiness. Whatever she does, it will be the open, obvious thing."

"And that will mean our ruin," Herron exclaimed bitterly.

"Not necessarily," Palgrave answered. "I often wonder whether all our tampering with human nature as we find it ever makes anyone happier. Perhaps Cheryl's decision in the real life, to which we must return, will make that life appear a better thing than we have known it. There we are overanxious for what we call the truths of science, neglecting perhaps even greater truths of the human heart. It may be that we shall learn the better way through the loss of all we cherish; and her decision may be our first step toward happiness. Only time will show us. We must follow the stream, drifting back as best we can to light and understanding. Here I am tired of things."

No more was said until we reached the pier and sat down to wait for the ferry.

"Let us take a short nap," Sylvester suggested, "until we have to go aboard. We may as well clear our minds for this existence, since we shall certainly have to endure it for a while. The bump of the boat against the piles will waken us."

We dozed off, to awake clear headed and refreshed, just as the ferry came to rest. Palgrave rose, stretched his arms, and yawned.

"That's better," he said. "I'm feeling disgustingly human again."

"Symptoms alarming?" Herron asked with a grin.

"Very. I lust for a long, cool stein of Culmbacher and a good thick steak, done rare, with French fried potatoes on the side."

"Let us find the others," I proposed, "and go to an Italian restaurant for a real dinner with all the trimmings. We have one coming to us after what we've been through—you especially."

"It's a go!" he cried joyously. "I shall drink one regulation pint of Dago red to my deceased love. By all the traditions I should pour two quarts of grape brandy and a gallon of steam beer down my gullet to extinguish my flaming sorrow. But I'm hanged if I'll make a complete fool of myself to flatter any girl on this green earth. Don't impute undue virtue to me," he went on with a wry smile. "Rather give the glory to my delicately balanced digestive apparatus."

"THE fact is," he laughed, "I detest the taste of alcohol in any shape or form. It has to be well disguised before I can look it in the face. A glass of beer with dry bread and ripe cheese is a gift of the immortal gods; but a raw douche of crude whiskey like that the Colonel guzzles, is an emetic. I endure our occasional bouts at Holst's only because his Limburger is unique

and Herron's conversation almost as strong. Pardon my confessing in this nude way in public," he concluded with his natural smile once more; "but I have unburdened my system of so much today that it seemed only decent to complete the exhibition and parade before the eyes of all men my naked skeleton."

That this was the plain truth we all knew. Neither Palgrave nor any of the other younger fellows thought enough of what we imbibed ever to miss it. But Holst's had a rich, smoky atmosphere about it that would have brought an oyster's sociability to the surface.

"I wonder where we shall find the rest of the crowd?" said Herron.

"We might telephone from here," I suggested, "and ask them to meet us at Sanguinetti's. There's time before the boat goes."

"I'll try Holst's for the Colonel," Palgrave cried back over his shoulder, hurrying into the waiting room, "and Savadan's lodgings for him. If Ducasse has come back with Culman and Beckford they'll most likely be up at Beckford's."

He rejoined us just as the last gong sounded, and made the deck in a flying jump.

"The Colonel's gone ahead to Sanguinetti's to hold down a table for the crowd," he puffed. "John's coming too. It's his night off."

"Fine!" said Herron. "What would Cheryl say if she knew?"

"Knew what?" Palgrave asked in surprise.

"That you were dining with a bartender."

"I don't give a—pardon me! I really am not interested in what Miss Ainsworth would think. John Petrie is whiter than most of the men she runs with—if she only knew it. But she wouldn't say 'how do you do' to him if she met him on the golden streets of Heaven. Forget her. I'm done with her in this life."

"That's the sensible, cold blooded way to look at it," I said encouragingly.

"Smith," he favoured me with his most acid professional smile, "if you must make an ass of yourself I shall be forced to kick you off the rear end of this cattle transport."

After that the conversation languished. We found seats on the sunny side, and watched the skyline of the City take sharper detail.

"Great old City, isn't it?" said Sylvester affectionately. "I love every mile of its fragrant streets and every athletic flea within its gates."

"Same here," Herron agreed cordially. "Except in summer when it is hot. Then the heavier perfume makes me drowsy, and the fleas wakeful, and between the two I toss my nights away in a fevered trance."

"Never mind, Bill," Palgrave laughed. "If Cheryl's vision comes true, and she collects her canny insurance, the City will be purified with a vengeance. Then there shall be no more fleas and no more smells. So many expert reformers have done their darndest to clean us up that perhaps fire is the one regenerator left. I mean the real thing, not the hell brand the enthusiastic reformers are so fond of."

"I hope it sings that scab of shanties off Telegraph Hill," said Herron gazing at the unsightly landmark.

"You lack the esthetic nerve," Palgrave replied, following his gaze. "Those shacks are an artist's dream of

beauty compared to our imposing nightmare of a City Hall, with its obscene marriage of the ancient Roman temple and the modern Turkish bath. Or is its waistline good old British Queen Anne? Anyhow it is ugly enough to be. I always feel bilious when I have to go out that way. It makes me think of a badly spoiled wedding cake."

"Cheryl's fire would never touch that masterpiece," I objected. "The thing's fireproof—or rather it was paid for on that assumption. Nothing short of a week's earthquake would do what must be done to our noblest confection to make it artistically digestible."

"Then let us pray for an earthquake a month long," he ejaculated with mock fervor.

"Amen," said Sylvester as the boat docked. We hurried ashore.

"I don't see why you fellows jump on the City Hall," Herron complained in an aggrieved voice. "It cost six million dollars."

"That signifies nothing," Palgrave retorted. "If they had grafted away sixty million instead of a trifling six they couldn't have made a more hideous mess of it."

"Well," I said, "whatever may be the matter with the outside of the City, you must admit that it's all right inside. San Francisco certainly knows how to feed herself properly. And that's the main thing at present. Come on, or the Colonel will make us pay for two dinners. I'll bet he's gluttonizing now."

"You're right," Palgrave assented. "My spleen got the better of my stomach. Come on, as you say. I'll never carp again. San Francisco whatever her faults—and they are invisible to anyone just after dinner—is still the queen of my heart. She has no rival. And she is a kind mistress. But," and his eyes grew dark and troubled, "this is all the shadow of a dream that shall vanish into nothing when we awake. We are merely dreaming that we are walking along these streets to find our friends in a place that does not exist."

"I know, I know," Herron replied. "Nevertheless here we are at Sanguinetti's. The sawdust on the floor is real enough; also the embryo orchestra at its everlasting sextette from 'Lucia'. And the aroma of the raviolis and grated cheese, though richly delicate, is no illusion. My inner man tells me so. Ah—there are the others. Culman looks as washed out as you, Palgrave. We need a twelve course dinner to set us right and solid with this world."

CHAPTER XI

Worlds Within Worlds

"T MUST be your legal training, Beckford, that makes you such a chronic disbeliever."

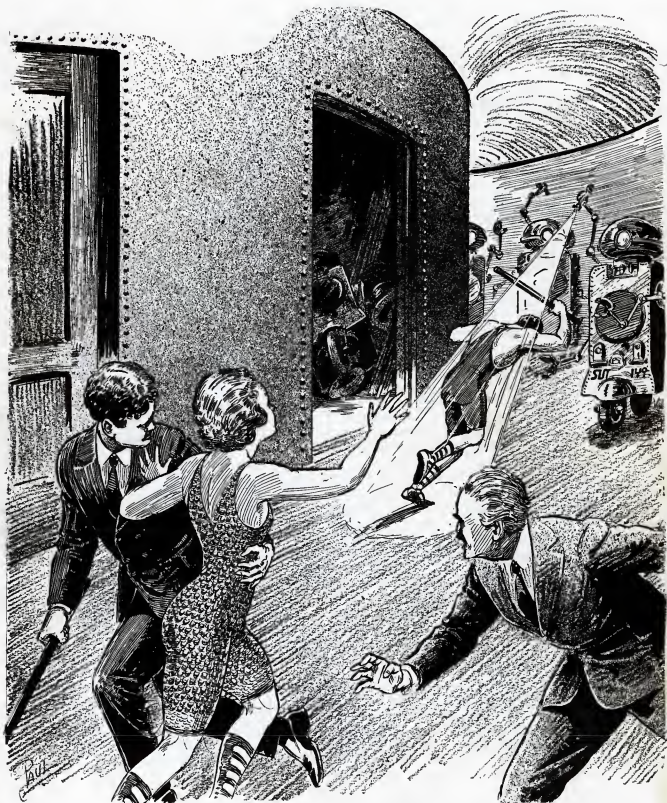
Palgrave, having delivered himself of this judgment, leaned back and lit his cigar. Under the Colonel's epicurean tutelage we had dined minutely and well. The toy orchestra was just rasping into a medley from "Rigoletto," but the shrill squeaks did not greatly distress us. Sylvester had insisted on standing treat, saying it was his turn as he so seldom spent a Sunday away from his ranch. He had just now tipped the head waiter with reckless generosity, so the table was ours, if we wished it, for the remainder of the evening.

Beckford was inclined to resent Palgrave's cool sum-

(Continued on page 899)

The Reign of the Robots

BY EDMOND HAMILTON



(Illustration by Paul)

Birk sprang back with upraised bar against the Master. The blue beam flashed. It struck Birk squarely.

THE REIGN OF THE ROBOTS

By the author of "The Man Who Evolved," "The Hidden World," etc., etc.

GRANT PERRY pushed his chair back from his desk with finality. "Mr. Loring, I may be a young man but I'm not a fool. Because I inherited one hundred million dollars is no reason for disbursing it to every fanatic society that comes along with a new idea."

Robert Loring, the older man in the office, looked at him calmly. "I expected this attitude on your part, Mr. Perry," he said quietly. "But our society is not asking for this money on the mere strength of an idea. We think we can give you proof."

"Proof of what?" Grant demanded. "You say your society believes that the ceaseless increase of man's machines and mechanical methods will in the end spell disaster for the human race. You tell me that your society wants to set up on some Pacific island a community that will live a simple life without mechanisms or mechanical methods and which will thus preserve human civilization in that spot at least from the machine menace."

"You tell me this," Grant continued, "and you ask me to donate twenty million dollars to establish your non-mechanical community. The only basis your society has for this request is its belief that humanity in the future will face a machine menace. And when I say that I don't give away twenty millions on the strength of beliefs, you say that you think you can prove to me that there'll be such a machine menace in the future. How can you possibly prove to me or anyone what the future will be like?"

"Easily enough," Loring answered. "We can let you see the future with your own eyes."

Grant Perry stared incredulously at Loring. There was for a moment quiet in the office, whose eastern windows looked out across Chicago's roar and tumult toward the far-stretching green expanse of Lake Michigan. Grant broke the silence.

"Let me see the future with my own eyes," he repeated. "Are you crazy, Loring?"

"I am not and neither am I joking," Robert Loring told him. "I can go into the future ten thousand years and take you with me, and we can see for ourselves whether or not the future will be as our society believes."

"But how could we or any other men travel ten thousand years into the future?" the young multi-millionaire

demand. "You surely don't mean that you've built some sort of time machine—"

"I don't," Loring interrupted. "No machine could take a human body through time into the future. I have found the one thing that can do it, take men physically across time, and that is the time drug!"

Before Grant Perry could comment, Loring was speaking swiftly. "Perry, I've worked on the thing for years. I knew to start with that time is but a dimension, but I soon found that no machine or vehicle could take men farther along the time-dimension. The only thing that could move a living human body forward or backward along the time-dimension, I found, would be a drug taken into the body for that purpose."

"I sought to prepare such a time drug, and after the deepest researches into bio-chemistry finally succeeded, literally combing the world for the super-rare elements and compounds required for its preparation. But at last I have ready this time drug, or rather, these two time drugs."

"For there are two drugs, with opposing effects. The first time drug, which I colored red to distinguish it, when taken into the human body

causes that body to move forward instantly along the time-dimension, into the future. The more of the drug taken, the farther into the future will that body be moved. Similarly the other drug, which I colored green, moves the body back along the time-dimension into the past."

LORING leaned forward. "I have made enough of these time drugs to take two men ten thousand years into the future and to bring them back to this time. It is impossible ever to make more of the drugs for earth seems not to have upon it any more of the necessary elements. But

with what I have, we two can go ten thousand years ahead and see the future for ourselves!"

Grant was staggered. "A time drug! Loring, are you serious—will these drugs actually take living beings into past or future?"

"I am absolutely serious," Loring answered. "I have tested the time drugs and know their power—they are now over in the rooms of our society, guarded by two of our members."

"But what was your purpose in making them?" Grant



EDMOND HAMILTON

EDMOND HAMILTON is the master of exciting stories that carry the reader breathlessly from the first word to the last without a stop. This story is one of those can't-stop-until-you-finish kind.

Many people believe that machines are not an unmixed blessing. Even as far back as a hundred years ago, Mrs. Shelley in her "Frankenstein" showed the machine—the creation of a human brain arising to overthrow its master. Many thoughtful people today believe that that may yet happen if we are not careful.

It is a monstrous thing to picture human beings as the creatures or slaves of machines; but if machines are given intelligence and power, their domination may be limitless.

Incidentally this story has an entirely unexpected as well as surprising ending that we doubt anyone will guess beforehand. Those ironical twists at the ends of his stories are part of Mr. Hamilton's great popularity.

asked. "You say that you are certain that your society is right about the future—that the machine menace to man will come to be. If you are certain, why do you have to convince yourself by going into the future to see it?"

"I do not have to convince myself," Loring said, "for like every one of our society's hundreds of members, I believe absolutely that in the future that machine menace to humanity will come to pass. But I have to convince you, Perry—you do not believe as we do and until you do believe will not give our society the twenty millions we need."

"So you propose to go into the future ten thousand years with me to convince me," Grant Perry added. "What if we found that your menace had not come to pass after all?"

"I don't admit even the possibility of that," Loring answered. "I and all our society are certain that the future will see man crushed by his own machines."

"Well, suppose we do go ahead ten thousand years and find machines dominating humanity," Grant said. "That will be the real future, won't it? Then how could your society do anything in this time to avoid what you know must come to be?"

"Whatever you and I would see, Perry," Loring told him, "would be the future only in this region where Chicago now stands. Human civilization might be at low ebb here ten thousand years from now. Yet down on the islands of the Pacific there might be a real human civilization, springing from the non-mechanical community our society wishes to establish there in this time."

"Logical enough," Grant Perry commented thoughtfully. He stared across the office for a time, then abruptly stood up.

"Loring, I'm going to do it! I'll use this time drug of yours to go ten thousand years ahead with you, and if we find humanity dwarfed or dominated by its machines I'll give your society when we return not only twenty millions but all I've got! If we find instead that humanity has benefited by machines and mechanical methods, your society gets nothing from me. Is it a bargain?"

"It is!" said Robert Loring, his eyes alight. "Perry, this venture of ours, if it convinces you, may mean the preservation of human civilization!"

Grant was impressed by the man's sincerity, and shook his offered hand. "Whether or not it convinces me, to travel ten thousand years ahead is an adventure I wouldn't miss."

"You're ready, then?" Loring asked. "We can start this morning—within the hour."

Grant was surprised. "This morning? But after all, why not if you have your time drugs ready?"

"We made all ready in the hope that you'd go," Loring explained. "The time drugs, as I said, are over in our society's rooms with two of our members guarding them."

"Lead on, then," Grant Perry told him. "If I stop to think this over sober sense may get the better of me."

Grant Perry's lightness had left him by the time he and Loring left their taxi in front of a building on upper Michigan Avenue. There was an earnestness and purpose about Loring that made the thing seem more serious. This venture across ages was no longer an interesting suggestion but something near and real, almost terrifying.

He glanced back up along Michigan Avenue, whose

long line of high square buildings rose buoyantly into the morning sunlight. Across the park from the busy street the green plain of Lake Michigan extended to meet the horizon. Grant asked himself if he was actually to hurtle out of this familiar place and time into the unfamiliar world of ten thousand years hence.

Robert Loring was unlocking a door with a pass-key and they entered a small ante-room. He led the way back through a compact auditorium with several hundred seats and through a book-crowded library to a small laboratory. Two elderly, scholarly-looking men were in the laboratory whom Loring introduced as Wilson Gunnett and Dr. Martin Dwale, fellow-officers of Loring's society.

"It is good that you've come," Gunnett told Grant. "It will mean much to our society—and to the world—if you are convinced that we are right."

Dr. Dwale had opened a safe and taken from it four small glass flasks which he handed to Loring. "We have kept close watch over them," he said, and added to Grant Perry—"It is because these time drugs cannot ever be duplicated, for lack of the necessary elements, that we have guarded them so closely."

Loring handed to Grant two of the flasks and a broad leather belt. Grant saw that one of his flasks held a bright red liquid and the other an equally brilliant green liquid, and that the belt had a pocket in which one flask could be carried without fear of loss or breakage.

"The red drug is that which will throw us ahead ten thousand years when we take it," Loring said. "The green drug is that which will bring us back to the present, and in these belts we can carry the green drug safely with us."

"But will the belts and the green drug go into the future with us?" Grant Perry asked. "If the drug affects only our bodies I'd think our clothes and belts and the green drug would be left in this time."

LORING shook his head. "No, the time drugs affect not only our bodies but everything in the immediate range or aura of our bodies. Thus our clothing and the belts and the flasks of the green reverse drug will be carried with us into the future and back with us when we return. Why, we could each take another person through time with us by holding him or her closely in our arms."

Grant donned the belt, the flask of green drug in its pocket. Then with the red drug in his hand looked inquiringly at Loring.

"We'll sit on the floor in taking the drug," Loring said. "We'll probably lose consciousness anyway in going through time."

"Of course you understand," he added, "that we run a risk of appearing in future time at a point where other matter already exists. If that happens we would be annihilated. But we'll have to chance that."

Gunnett and Dr. Dwale had placed cushions on the floor and the two seated themselves on these. Grant unscrewed the top of the flask of red time drug and smelt it. The stuff had a strange, pungent odor of unfamiliar chemicals.

Loring had opened his flask also. Grant Perry's heart was beating rapidly and he saw Gunnett and Dwale watching with awe on their faces from the room's edge. Loring, his eyes on Grant's, nodded and raised his flask,

drinking rapidly the red liquid in it.

Grant Perry raised his own flask, gulped the red time drug. The taste was strange, strong but not unpleasant. Hardly had he swallowed it than the room seemed to spin rapidly around him. Then it vanished from about him as he was hurled into blackness.

CHAPTER II

Caught!

BLACKNESS—blackness—out of it Grant Perry emerged slowly, stirring and opening his eyes. He sat up, more than a little dazed, felt a movement beside him and saw Robert Loring, who had been lying beside him, opening his eyes. He and Loring looked about them, at first mechanically, then with quick interest and amazement.

The laboratory—the street—the whole vast plain of buildings that was Chicago had vanished entirely from about them. They sat upon a long sloping sandy beach. A hundred yards in front of them the waves of Lake Michigan lapped on this beach, but all along its sandy length was no structure or sign of life.

Grant looked upward at the sun as he and Loring got to their feet. It was climbing toward the zenith as when he and his companion had taken the time drug, but was higher now. The wind blowing from the east upon them seemed cold to him, and the only sound to be heard was the washing of waves on the beach.

As Grant took in the immensity of the change he gripped Loring's arm.

"Chicago!" he uttered thickly. "It was here—all about us—a few minutes ago!"

"It was here ten thousand years ago, you mean!" Loring said. "Grant, the time drug has worked—has thrown us ten thousand years ahead. Chicago seems to have perished entirely in those ten thousand years."

"Perished entirely!" Grant exclaimed. "My God, the people I knew, the world I knew, dead and gone thousands of years ago!"

"Keep your nerve, Grant!" Loring commanded sharply. "Remember, we're going back to that world and time, back to Chicago, when we've seen what we came here to see."

His words brought Grant Perry's mind back to the motive of their venture. He looked about.

"But there's nothing to see! Nothing but the lake, which hasn't changed, and this beach."

"There must be more than this farther back inland," Loring said. He seemed to Grant a little doubtful, anxious. "It can't be that there are not humans somewhere here."

"Before we leave this spot, though," Loring added, "we'll mark it—this black stone will do it—for we'll have to be here when we take the drug throwing us back to our own time, or we won't go back to the room we started from. And it would mean death if we appeared in some spot where matter already was."

Having set the black stone he had noticed upon the spot, Loring started with Grant up the beach's slope. They came to its crest and stopped to stare.

A great plain stretched inland as far as eye could see. No buildings were visible on it but dotting its surface at distances of a quarter-mile from each other were several

hundred round dark openings like the mouths of so many wells or shafts.

Grant Perry was turning to Loring to exclaim upon this strange sight when something emerged suddenly from the well-mouth nearest to them. It was a slender white human figure that raced instantly from the well-mouth toward the lake, heading toward Grant and Loring!

"Loring, we've found some humans, at least!" Grant exclaimed. "Look, he came out of that nearest opening—"

"And he's running straight toward us!" Loring cried. "No, she's running! It's a girl!"

But Grant had already seen that the figure fleeing toward them was a feminine one. It was a dark-haired girl who wore for clothing a green metallic-like tunic that sheathed her slender figure only from shoulders to knees.

In her flight she seemed not to see Grant and Loring until within yards of them, then halted and recoiled, her dark eyes wide with terror. As she took in their appearance she seemed a little reassured, seemed to decide swiftly that they were a lesser peril than whatever was behind her, for she came straight on again to them.

Grant Perry saw as she reached them that her finely-cut face expressed a breathless fear. She spoke rapidly to them, and to his surprise Grant understood what she was saying. For the girl was speaking in English, an English that seemed distorted and slurred as though by many centuries of change but that was understandable.

"Are you two mad to remain here?" she was asking Grant and Loring. "Some of the Masters may emerge at any moment—I escaped but now from that city and they will be after me!"

"The Masters—city—" Grant repeated. "What Masters are you talking about and what city?"

"I mean the Masters—they who rule!" the girl exclaimed. "And I mean the city there before your eyes—do you not see the openings of its cells?"

"Grant, those openings must be the entrances to some great underground city!" Loring exclaimed. "But what are the Masters like?" he demanded tensely of the girl. "Why are you fleeing from them?"

"Surely you know what they are like," answered the girl incredulously. "Are you not two who have escaped from some cell? As for me, I am Eda and I escaped from there with the help of my brother Birk because the Masters had ordered me to the laboratories."

"Loring, it's all Greek to me!" exclaimed Grant Perry. "But whatever she's running away from—"

He was interrupted by a sharp cry of terror from the girl Eda. She was looking back toward the well-mouths, frozen in fear.

"The Masters!" she cried. "They come! They have followed me!"

GRANT and Loring spun, were for the moment motionless themselves, amazement holding Grant. He had expected to see the girl Eda's pursuers humans, at least, but they were machines!

There were two of them, cubical metal things four feet square, each topped by a head-like little hemisphere in which was a single glass lens with a small mouth-like aperture beneath it. They had each three jointed tubular

metal arms as long as and larger than human arms, and they rolled rapidly forward on small wheels that upheld the cubical metal shapes.

Grant saw black tubes held by the arms of the things and swift consciousness of danger seized him.

"They're machines!" Loring was babbling. "God, Grant, I was right—machines pursuing humans, mastering humans—"

"We've got to run for it!" Grant cut him off. "Eda, quick! Down over the beach!"

A narrow beam of blue light shot toward them from the upraised tube of one of the pursuing Masters. There came a despairing cry from Eda.

"Too late! They will kill us with the blue beams now if we try to run!"

"Grant, those beams are some deadly weapon!" Loring exclaimed. "Look, another of them!"

Another of the pale blue rays had stabbed from the other of the two oncoming Masters, driving past the three humans. The two beams seemed a warning to them not to attempt flight, as with a sweep the beams could reach them.

Helplessly Grant watched the two weird shapes roll rapidly toward them. Eda also stood watching them come on with pale face and Loring with eyes in which intense interest and fear were mingled.

As the two Masters rolled up to them their blue beams snapped out, though each held its black tube ready for action in the pincer-like hand of one of its metal arms. The head-like hemispheres of the things rotated slightly, the glass lens of each seeming to survey the three humans. There was something oddly human in the way in which the metal shapes inspected them.

"Loring, you're right!" Grant Perry said in a low voice. "They're machines! Moving, conscious machines!"

The foremost of the two Masters spoke, his voice metallic and precise, his language the same changed, distorted English as Eda's.

He was speaking to Eda. "You are Human 44-N-626 of our Cell 382. You were ordered to the laboratories by the Master-Who-Thinks of our cell. Instead of reporting there you made your way with the help of some human yet undiscovered to our cell's air-opening and tried to escape.

"You will go before the Master-Who-Thinks for this attempt." The thing turned its glass lens from Eda to Grant and Loring. "It is evident that you two also are escaped humans," the metallic voice stated dispassionately. "State the number of your cell and your serial number."

"We never saw your city and its cells, or you either, before now!" Grant Perry told it. He found it hard to talk to this metal shape as to an intelligent being. "We're certainly not any slaves of you who call yourselves Masters!"

"It is evident that your mental apparatus is out of order," said the Master. "All humans serve the Masters and all humans have their assigned cells and serial numbers."

The other Master spoke, in the same metallic voice. "Their clothing is not the regulation attire issued to humans, and their speech seems strange. It is possible that they escaped some time ago from another city of

cells. It would be wise to examine them more closely."

The first Master rolled toward Grant and Loring. As its metal arms reached toward him Grant drew back dangerously, his fists clenched. The other Master raised his tube.

"You will be beamed if you resist," came his flat metallic voice.

"Do not resist!" cried Eda tensely to Grant. "The Masters will kill you instantly!"

Grant Perry saw himself the hopelessness of resistance, let the Master approach. It was weird to have that glass lens turn attentively upon him as the thing plucked at his garments with its pincer-like hands.

The leather belt that held the flask of green time drug seemed to interest the Master, who loosed it and examined the flask of drug. Making nothing of it, apparently, the thing tossed belt and drug away and made a similar examination of Robert Loring. His belt also it detached and examined, and it also and its flask of drug it let drop into the grass.

The Master rolled back to its companion, its examination completed. "It is evident that you are escaped humans from some other cell and perhaps some other city than ours," it told Grant and Loring, "despite your strangeness of attire. You will go with Human 44-N-626 here before the Master-Who-Thinks of our cell for further examination."

IT ROLLED quickly around behind the three humans, leaving its companion ahead of them. "Start toward the cell-opening," it told them. "If you make any move other than to walk ahead as ordered, you will be beamed." "Loring, our flasks of the green time drug are lying there in the grass!" Grant whispered tensely. "Without them we can't get back to our own time!"

"Grant, don't try to get them!" Loring told him. "A move to do it means death from those beams! If we can escape back out here we can find them quickly."

Grant Perry hesitated, then as he saw the tube of the Master behind them come up suggestively, started forward with Robert Loring and Eda, following the Master ahead. They headed across the green plain toward the nearest well-like cell opening, that from which Eda had emerged.

Eda herself seemed returning to the cell from which she had fled with an evident dread. But she looked up at Grant with interest on her face as they moved along between the two metal Masters.

"Are you not really from any cell or any city of cells?" she asked. "I never heard before of humans without Masters over them."

"We are not even of this time, Eda," Grant told her. "We come from a time far in the past when humans were lords of the earth, and we find them now slaves to these weird Masters."

"These Masters—are they not machines?" Loring asked the girl tensely. "Conscious and intelligent machines?"

"Of course they are," Eda answered. "That is why they are the Masters—machines always are wiser and stronger than humans."

"Grant, you see that I was right, that our society was right!" burst Loring excitedly. "Machines the rulers of humanity! I knew that it would come to pass! I knew it!"

"Grant—is that your name?" asked Eda of Grant, and he nodded.

"Yes, and his name is Loring, Eda. But tell us, are there not any traditions among your people of a time when humans had no machine Masters?"

Eda frowned thoughtfully. "There are legends that tell that," she admitted, "but only very foolish people believe them, Grant."

"But what are they?" pressed Loring.

"They say," Eda recalled, "that ages ago men themselves made machines. Is it not foolish to think that humans could ever make the great, wise machines? But the legends say that they did make machines to do more and more of their work for them and that in time the machines themselves made other machines."

"Then say the tales, the machines came to have more and more of power and intelligence and men less and less. And so there came a day when the machines seized power altogether and made of men their slaves, constructing their great cities of cells below ground to hold themselves and their human slaves."

"So run the legends," Eda concluded, "but only very witless people can credit these absurd stories of a time when men were the Masters and machines the slaves."

"Grant, you heard?" demanded Robert Loring. "The very menace our society feared, happening as we foresaw!"

"Your society was right, Loring," Grant Perry admitted. "But who could have believed it without seeing this? Well, if we get back to our own time the twenty millions go to your society, but it looks as though our chance of getting back is slim."

He glanced back over the plain toward the ridge where the Masters had captured them and where the two flasks of green time drug lay in the grass. As though reading his thoughts the cubical metal Master behind him shifted its beam-tube a little, and Grant again looked ahead.

They were nearing the dark round opening that was their destination, Grant Perry saw that it was approximately ten feet in diameter and that the well or pit of which it was the opening was lined with metal. Eda too was gazing at it as they came closer, an expression of hopeless despair on her face.

"The air-opening of Cell 382—my cell," she murmured. "Soon now we three will be down in it before its Master-Who-Thinks."

"What will they do to you, Eda?" Grant asked her. She looked up at him.

"They will send me to their laboratories, but this time it will be for vivisection."

"For vivisection?" repeated Grant, horrified, and she nodded without evidencing as much horror at the idea as he.

"Yes, Grant—any humans who show signs of insubordination are sent to the laboratories by the Masters for scientific examination to determine what mental factors cause this, so that it can be bred out of future slaves. When a human commits some act of rebellion or attempts escape, he is sent for vivisection so that this rebellious strain can be avoided in future slaves."

"I had shown myself insubordinate several times and had been ordered to the laboratories for examination. Rather than undergo it I escaped with the aid of my brother Birk, as I told you, but now that they have me

again the Masters will surely send me to the laboratories for complete vivisection."

"They won't!" Grant told her. "These mechanical monsters vivisection you! I'll see that you escape it, Eda!"

Her hand clasped his impulsively. "Grant, you can do nothing," she told him. "You forget that here you and Loring are but slaves yourselves."

CHAPTER III

In the City of Machines

THEY had come by then to the edge of the metal-lined shaft or pit, and Grant saw now that a spiral steeps stair or ramp led down into the shaft. With the two Masters guarding them still the three moved down this into the shaft.

Glowing bulbs set in the shaft's metal wall illuminated its interior. They went down it fifty feet and came to its floor. At the shaft's bottom was a round room, all around the metal wall of which were square metal doors. A Master with black beam-tube stood guard at the center of this round room.

Grant and Loring saw tube-openings above each of the closed metal doors. The girl Eda explained it, as one of their guards went to one of the doors.

"These twelve doors are the doors of the corridors that branch out into this cell like a wheel's spokes from the hub. Off each corridor open the different rooms, rooms of the machines, work-rooms where the machines reproduce themselves, supply rooms and slave rooms and the like. The tube-openings above the doors draw air from this shaft through the corridors and rooms."

"The Master stationed here is to prevent any humans from getting up the spiral stair to the surface," she added, and then in a whisper, "I could not have done so had not my brother Birk attacked the Master on guard here. Birk killed that Master and I escaped upward, but Birk himself had to flee back into a corridor to avoid discovery."

"Can the Masters be killed, then?" Grant asked in surprise.

"Not really killed, Grant," said Eda, "but if their hemispherical heads are crushed they are like dead until repaired."

Their two guards forced the three through the open door into a dim-lit, metal-lined corridor, closing the door behind them. As they started along it a question of Loring brought the information from Eda that each cell held a thousand Masters and ten thousand humans.

"A thousand Masters and ten thousand humans to a cell!" Loring repeated. "Grant, how many of them must there be in all this city of cells? We saw hundreds of shaft-openings, cell-openings, in the plain!"

"I do not know how many cells there are in the city," Eda said. "Humans are not allowed to pass from one cell to another through the underground passes, though the Masters do so. I know though that beside the Master-Who-Thinks of each cell, the entire city has a single Master-Who-Thinks also, who rules supreme in it."

"By heaven, it's incredible!" Grant Perry exclaimed. "An immense city of cells, a city of machine masters and human slaves, underground. And there must be other cities—maybe many of them!"

By then they were meeting others in the corridor, a few of the weird cubical metal Masters rolling along it on errands of their own, and a number of the human slaves, men and women, young and old.

All of them were dressed, Grant saw, in the same abbreviated metallic tunic such as Eda wore, and it was apparent that this was a regulation attire. They seemed to Grant astonishingly like people of his own day, the younger men stalwart and most of the girls pretty. But he saw that all shrank against the wall to allow the metal Masters to pass, cringing visibly to the weird cubical things.

Most of the humans carried tools or burdens of some sort. Grant had noticed that the doors along the corridor they followed were kept closed but as they passed one, two humans, men, were coming out and he had a glimpse through the half-opened door of the interior of the room beyond.

It was a medium-sized room lined or faced also with metal and in it at the moment were three of the metal Masters and a dozen humans. The Masters rested motionless while the humans, with oils and thick cloths, burnished and cleaned their cubical metal forms. Only a glimpse of the weird scene was given Grant as they passed but it shook and horrified him with its sheer strangeness.

A little farther along the corridor they saw a room lined with tiers of bunks and this Grant guessed to be one of the slave-rooms. They passed closed doors also from behind which came the clash and stamp and hum of great machines.

"Work-rooms where the machine Masters make new Masters," Eda said. "In some of them humans are not allowed, ever."

"God, what a weird world!" Grant Perry exclaimed. "Loring, it's a nightmare!"

"It's what the people of our own time can't—couldn't—see coming!" Loring answered.

The two Masters conducting them halted them, opened a door and thrust them in, and as they followed and closed the door Grant and Eda and Loring found themselves in a square, metal-walled room that was not large but that was intensely silent.

"The Master-Who-Thinks!" whispered Eda. Grant and Loring stared. "The Master-Who-Thinks of this cell!"

At the room's center on a low dais rested a Master unlike any of the dozen or more of cubical metal things they had seen thus far. It had no cubical body at all, but was all hemispherical head, a head that was a half-sphere of metal six feet across, resting motionless on its dais.

IT HAD turned its glass lens toward the three as they entered with their two guards. Eda shuddered beneath that gaze, clung closer to Grant who put his arm across her shoulders and stared defiantly at the glass lens of the Master-Who-Thinks. One of the two Masters guarding the three rolled forward toward the Master-Who-Thinks and made report in metallic voice.

"We have recaptured Human 44-N-626 as you ordered, who had escaped out of the cell to the surface. With her, when apprehended, were two humans who refused to give their cell and serial numbers and whom we have brought back with her."

From the mouth-opening of the Master-Who-Thinks came its own toneless metallic voice. "It is well. I will attend first to 44-N-626."

The thing spoke to Eda, its glass lens turned upon her. "44-N-626, you were ordered to report to the laboratories for examination. Instead you went to the cell's air-opening shaft with some other human not yet apprehended. Your companion killed the Master guarding the air-shaft by crushing his brain-case with a heavy tool, while you escaped to the surface.

"Your companion was glimpsed running from the air-shaft back into a corridor immediately after he had killed the Master, but his identity was not discovered. What is his serial number?"

Out of her terror Eda managed to pluck defiance. "I won't tell," she said.

"You are guilty of direct disobedience and attempted escape and are involved in the killing of a Master," said the Master-Who-Thinks, dispassionately. "You will be taken to the laboratories where the vivisectors will attempt to discover the reason for this conduct."

"They'll not!" burst in Grant Perry furiously. "You damned metal monstrosity, do you think you can order humans to torture!"

"Grant, don't!" cried Eda. "You can't save me and you'll make it worse for yourselves."

"Machines ordering humans to death!" Robert Loring was whispering. "God, it's incredible!"

"You will take 44-N-626 to the laboratories and deliver her to the vivisection-room," the Master-Who-Thinks told one of the two waiting metal Masters.

As the monstrous metal shape picked up Eda in its pincer-like arms to begin to move out into the corridor, Grant sprang with white face to aid her. The other Master's black beam-tube came up for action but Loring had clutched Grant and despite his struggles was holding him back as Eda was taken out into the corridor.

"Loring, let me go!" Grant cried as the girl and her guard disappeared. "I'll not let them take her to that torture!"

"You can't help her, Grant!" Loring exclaimed. "You'll only be committing suicide!"

The calm metallic voice of the Master-Who-Thinks cut across theirs. "It is apparent that these two humans, whatever their cell is, are insubordinate also," it stated.

Grant Perry spun around to the great metal hemisphere. "We are and we will be!" he raged. "In our time, machines were slaves to us humans, you damned metal monster! Do you hear me—slaves to us!"

"Grant, for God's sake—" Loring was tugging at his arm but Grant was too furious to heed.

The Master-Who-Thinks was silent, its glass lens seeming to consider them contemptively. When it spoke its voice had the same unhuman absence of passion or indignation, and it spoke to the remaining Master guarding Grant and Loring.

"These two humans seem not from any of this city's cells," it stated, "and appear unusual in a number of ways. You will take them to the great Master-Who-Thinks whose wisdom directs all this city, in Cell 1. He can examine them, and if he thinks best can have them vivisected to determine the reason for their unusual attitude of defiance."

At once the Master beside them swung open the door,

raising its beam-tube pointedly, and Grant and Loring passed out into the dimly lit corridor again. As they started along it, with the Master rolling watchfully just behind them, Grant saw that they were moving farther down the corridor from the shaft of the air-opening, instead of returning toward it.

"The thing will probably take us through the underground passages that connect the cells to this Cell 1 where the Master-Who-Thinks of the whole city is," he told Loring, who nodded sadly.

"If they had taken us onto the surface, even if but for a little time, we might have had a chance to escape, and get back to where our time drug flasks lie," Loring said in a whisper.

Grant Perry shook his head. "I couldn't do it, Loring—I couldn't go and leave that girl Eda to torture. And yet even now we can't help her, may be going to the same torture ourselves."

THEY had gone by then perhaps a half hundred feet along the corridor, which had a little ahead a turn that hid its further length from view. The doors along the metal-walled corridor were closed, and though they had passed two Masters and a few human slaves on emerging into the corridor, there was now none of either in sight ahead or behind them.

Grant had just noticed this when an astonishing thing happened. One of the closed doors they had just passed opened swiftly, a tall man-slave with a bar-like metal tool in his grasp darted out into the corridor behind the Master rolling behind Grant and Loring. He brought the tool down in a terrific blow on the Master's hemispherical head before the thing could turn!

Instantly all motion on the part of the Master stopped, its head-hemisphere crushed by the blow, and it remained motionless as any inanimate thing of metal.

Grant and Loring had spun around, stared at the man with the bar. He was a stalwart, dark-haired fellow dressed in the regulation metallic tunic, and his face even in that first moment seemed somehow familiar to Grant Perry.

His first swift words explained that to Grant. "I am Birk, brother of Eda with whom you were brought here!" the fellow told them hastily. "Quick, we must get this Master out of the corridor!"

They helped him push the motionless cubical body of the Master into the room out of which he had darted, evidently a supply-room as it held only stacks of metal bars. Once inside Birk closed the door swiftly.

"We will all go to the vivisectioners at once if they find us here with this Master I have killed," he told them. "My life is forfeit as it is if they discover I killed one in helping Eda escape."

"But why take the risk for us?" Grant asked him. "You never saw us before!"

"I did see you," Birk told them, "when you were brought back with Eda. I waited here for a chance to free Eda when she was taken past here, but when that occurred there were many Masters in the corridor and I could do nothing. But when I saw you come with your guard there was a chance and I took it."

The thought uppermost in Grant's mind found voice. "Where have they taken Eda? Where are the laboratories to which she was ordered?"

"Around the next turn of this corridor are the labora-

tories of this cell," Birk said. "But why do you ask?"

"Because I don't mean to escape or try to escape unless Eda is with us," Grant Perry told him.

For a moment there was silence in the dimly lit, metal-walled room where Birk and Grant and Loring crouched beside the unmoving cubical body of the metal Master. Then Birk reached, and clasped Grant's hand.

"There is small chance of any of us escaping," he said, "but since you are with me we do not escape without Eda."

"But if we do escape," Grant said, "if we get back to where our time drugs are, Loring, could all four of us return to our time with them?"

"We could, Grant!" Loring nodded. "You remember I told you that the time drugs affect all in the direct aura of the body taking them, and that the person taking them could take another person through time with him by holding the other close. We can take Birk and Eda back with us to our time all right if we get to the drugs."

"Good!" Grant approved. "Then the three things we have to do are to get Eda out of the laboratories, to escape with her back up to where the drugs are, and to take the drugs."

"I have been thinking," Birk said, "and I believe there is but one chance of rescuing Eda from the laboratories. If I were to go to the vivisection-room where she will be held, and tell the Masters there that the Master-Who-Thinks ordered me to bring Eda back to him for further questioning, they might let her go with me."

"There is more chance that they would not," he admitted, "but there is still a chance that they would, and it seems the only chance, for there is no hope whatever of our being able to take her out of there by force."

"But what are we to do?" Grant Perry demanded. "Why can't we—I, at least—go with you?"

Birk shook his head. "You would destroy all our chance, Grant. You and Loring are dressed in such strange garments that you would be noticed instantly, and seeing you the Masters in the laboratories would immediately know that something was wrong."

"He's right, Grant!" Loring exclaimed. "It will be best for all if we wait here until Birk returns with Eda, if he can get her by this stratagem. Then we can make a break to get to the surface."

"And hard it will be to get there," Birk added. "You two will wait here then as Loring says. I will leave this bar here with you, for it would excite suspicion in the Masters of the laboratories if I carried it."

"But what about the beam-tube of this Master?" Grant asked, pointing to the black tube held in the unmoving pincer-grasp of the cubical thing beside them. "We can use that for a weapon, can't we?"

Birk shook his head. "No, Grant, for the blue beams it produces affect only humans and living things like humans—they are beams that in some way change the organic matter of the bodies they strike into inorganic matter instantly, annihilating the life in those bodies. But as the Masters' metal bodies are themselves inorganic, the beams have no effect upon them."

He handed Grant the metal bar and turned to the door. "Stir not from this room until I return," he warned them. "I will be back soon with Eda or will not be back at all, and in that case you must use your own judgment as to escaping."

CHAPTER IV

The Revolt

HE SLIPPED out into the corridor, closing the door after him, and was gone. Grant Perry and Robert Loring stared at each other in the dim light, silent as though the situation was too much for words. To Grant the scene around him, the metal room with its stacks of metal and with the motionless cubical form beside them, was unreal in its weirdness.

Yet to his mind, dazed a little by the swiftness and strangeness of what had befallen Robert Loring and himself since taking the time drug, all they had gone through seemed almost unreal. Yet Eda—the slender, dark-haired girl was real enough!

But would Birk be able to free the girl by his stratagem? Grant Perry realized that Birk already should have had time to be back with Eda had he succeeded. Fear of Birk's failure was grasping Grant like a cold hand when the room's door opened. With a glad exclamation Grant leapt to it to meet Birk and Eda, then froze.

A Master stood in the door!

The cubical metal thing had no beam-tube but in the instant that it glimpsed Grant and Loring in the supply-room it seemed to comprehend the situation, started a metallic cry as it rolled back from the door. Grant leapt and crashed his bar down squarely on its rounded head, its cry cut off as it became motionless.

But the Master's metallic cry was answered from somewhere down the corridor by other metallic voices! Loring had leapt out into the corridor after Grant, grasping one of the metal bars stacked in the room.

"Grant, that thing's given the alarm!" he cried. "There'll be Masters here in a moment!"

"We can't leave Birk and Eda!" Grant cried. "I'm going to get them!"

Around the corridor's turn raced Eda and Birk! "The Masters are coming!" Birk cried, tearing Loring's bar from him. "Down the corridor—they loosed the beams on us!"

"Quick—to the air-shaft!" shouted Grant.

Before they could move, a cry from Eda! "Behind us—a Master!"

Around the corridor's turn a dozen feet behind them had rolled a Master in pursuit of Birk and Eda. It stopped, beam-tube rising swiftly with deadly purpose.

Grant remained frozen for the instant with Eda and Loring, expecting the blue beam to wipe them out in the next second. But Birk sprang back with upraised bar toward the Master!

The blue beam flashed when Birk was still a yard from the metal Master! It struck him squarely and as it did so Birk reeled, but as he fell forward his bar crashed down on the Master's metal head! The tube fell and its beam vanished! Birk lay across the motionless and inanimate Master in a huddled heap!

"The beam got him!" Loring cried. "For God's sake, Grant, let's get on! There'll be other Masters on us in a moment!"

"Birk! Birk!" Eda was crying, but Grant Perry grasped her shoulders, half-carried her with Loring and himself as they raced down the corridor toward the air-shaft. "He's dead, Eda!" he told her hoarsely. "Unless we get clear quickly they'll have us too!"

They heard the clamor of pursuit swelling back along the corridor as they raced down it past the closed doors, to the door opening into the round room at the air-shaft's bottom.

Without hesitating Grant Perry ripped open this door and sprang into the room with bar upraised. The Master on guard there whirled round but before he could complete his turn or raise his tube Grant's bar had crashed down on the hemispherical metal head. Then Grant and Loring and Eda were on the stepless spiral stair.

Metallic cries reached their ears from below in menacing chorus as they raced up the spiral ramp. They burst up into the brilliant sunlight that was almost blinding, the green plain with its hundreds of round openings stretching behind them. Loring pointed ahead, toward the lake and beach.

"The ridge there by the beach!" he panted. "If we can get to the time drugs—if they're still there!"

They ran, Grant's heart thumping. Eda was stumbling, seemed winded. She sank to the ground, motioned them weakly on. "Go on!" she cried to Grant. "You and Loring can escape, Grant, if your drugs mean escape, but if you delay for me the Masters will get us all!"

Grant whipped down, grasped her, and ran on behind Loring. "They'll not get you without getting me, Eda!" he told her panting.

It was requiring all his strength to run with the girl in his arms. They were half-way to the ridge and now Eda cried out.

"The Masters! They come out of the air-shaft, Grant!"

Grant Perry glanced back, saw a half-dozen cubical metal shapes emerging from the air-shaft's opening. The Masters had tubes but instead of beaming the fleeing humans were moving after them.

"They're not using the beams!" Eda exclaimed. "They think we can't escape them and that they'll take us alive!"

"They'll never take me alive to their vivisectors!" Grant cried. "Nor you either, Eda!"

"We can't make it, Grant!" sobbed Loring. "They'll be on us by the time we reach the drugs!"

GRANT set his teeth, spurted with the last of his strength, Loring hurling himself staggeringly forward with him. The Masters were close behind, coming rapidly after them, as they reached the ridge.

Loring pawed frantically in the grass, cried hoarsely as he found the two flasks of the green time drug. He thrust one into Grant's hands.

"We daren't take the drug here, Grant!" he cried. "We've got to take it down on the beach there where we first found ourselves—so we'll reappear in the room we started from!"

Grant remembered what Loring had told him, the necessity of reappearing in the spot in their own time lest they reappear where matter already was and meet death.

"The spot you marked with the black stone! But can we get there in time?"

"The Masters are close!" warned Eda's cry.

They rushed over the ridge, down the beach toward the black stone that Loring had placed at the spot of their appearance. As they reached it the half-dozen Masters were coming over the ridge after them.

They had the flasks open as the metal shapes rolled down the sloping beach toward them. Loring drained the green liquid in his flask with a swift motion and Grant, holding Eda with one arm, did the same, then dropped the empty flask to hold Eda tightly to him.

He felt the drug taking swift effect upon him, the world spinning rapidly around him! But as it did so he heard a cry from Eda, felt the cold pincer-hands of the metal Masters grasping her, tearing her out of his hold! And as Eda was torn from Grant's grasp the world spun faster and then he was shot again into blackness.

* * *

Grant Perry came slowly out of black unconsciousness for the second time with the sensation of hands supporting him, anxious voices in his ears. He muttered "Eda!", clung to the hands holding him, then as his eyes opened, stared upward in amazement.

Bending over him was Dr. Dwale, his scholarly face worried in expression as he lifted Grant. A few feet away Wilson Gunnett was helping Loring to his feet. They were in the room of Loring's society from which they had started! Grant Perry staggered up.

"Eda!" he cried. And to Dr. Dwale, "Where is she, man?"

"Who is Eda?" asked Dwale uncomprehendingly. "You and Loring appeared here but moments ago—here on the floor."

Swift remembrance smote Grant. "Loring, they took Eda! The Masters tore her out of my hold at the very moment we were starting back through time!"

"And you came back with me, without her!" said Robert Loring. "Grant, it's terrible."

"But I'm going back for her!" Grant Perry cried. "You hear me, Loring—you're going to make more of the drugs and I'm going ten thousand years ahead again and get her! Those damned metal Masters are not going to give Eda to their vivisectors! I'm going back!"

"Grant, you can't!" Loring told him. "It's impossible to make more of the time drugs—I told you before we started that there were not enough of the rare elements on earth to make more!"

Grant Perry was agast. "But Loring, surely if you comb the world you can find more, can make more of the drugs? Expense means nothing, man! Think what it means to me and to Eda!"

Loring shook his head sadly. "It's impossible, Grant. Not all your millions can find any more of the elements which we had already combed earth to find. Grant, I hate to say it, but the time drugs can never again be made."

"And Eda there, going back to that city of metal monsters and human slaves," said Grant, staring ahead. "Going back to the laboratories of the Masters—"

He sank into a chair, covering his face with his hands. When he straightened, minutes later, he saw Dwale and Gunnett and Robert Loring regarding him with pitying eyes. He walked over to them.

"Loring, it's not your fault," he said. "You can't make more of the time drug and without the drugs the time that separates me from Eda can't be crossed. My millions can't help there, as you say."

"But they can help your society's work, can establish the community that may preserve a human civilization in some part of earth against the machine menace you

foresaw. God knows I believe in that menace now. It can't save—Eda—but it may save others.

"I'm going to give you the twenty millions for your society now." As the three uttered exclamations Grant Perry raised his hand. "Don't thank me—what does the money mean to me now? But Loring, if you and your friends come over with me to my office we'll put it through now."

IN A FEW minutes the four were outside in the bright sunlight of Michigan Avenue, hailing a cruising taxi.

As they rode down the busy street through the thronging traffic, Grant Perry stared without speaking through the cab's window. Neither Loring nor Gunnett nor Dwale broke the silence.

When they reached the office where Grant had talked first with Loring, he gave brief orders that sent his secretaries hurrying. Within an hour a flat packet lay on Grant's desk and a legal-looking sheet that he signed.

"The twenty millions, Loring," he said. "It's for your society to use for the specified purpose of establishing a non-mechanical community on some Pacific island, you to direct all expenditures and operations."

"Grant, you know what it will mean to me," Loring said, "and to Dwale and Gunnett and all our society."

"And what it may mean to humanity, to the world!" added Martin Dwale. "The humans it may preserve from that monstrous slavery to machines you saw in the future!"

"From which slavery we failed to save Eda," said Grant Perry softly. "But no matter—here's the twenty millions, Loring, and you know I wish your society success."

He was extending the packet and sheet to Robert Loring when the door of the office opened suddenly. In it stood a girl modern in dress from the small hat on her dark hair to her trim high-heeled shoes. But the girl—

"Eda!" cried Grant. He met her, held her close. "Eda, how did you get here? How could you get here?"

"Grant, I'm not Eda at all," she said. "I'm Edith—Edith Loring."

"Edith Loring?" repeated Grant, stupefied. "Then Loring here—"

"Is my father," she said. Robert Loring had come forward, his face pale.

"Edith, you have ruined everything," he said quietly. "All our society's work—all its hopes—"

"I couldn't help it!" she cried. "I couldn't bear to go on hurting Grant—letting him think he had failed to save me from torture and death."

"What does all this mean, in God's name?" demanded Grant Perry dazedly. "Eda—Edith—I left you ten thousand years in the future in the hands of those machine Masters!"

"You didn't, Grant," said Edith Loring. "You see, you were never in the future at all."

"But the time drug!" Grant exclaimed. "And that underground city of mechanical Masters and human slaves—we were in it—escaped from it! Don't tell me that it wasn't real!"

"It was real, Grant, but wasn't the future," she said. "Before I tell you the whole plot, Grant," she contin-

ued, "I want to make one thing clear to you, and that is that my father and all the other members of his society are absolutely sincere. They believe with all their souls that humanity will be menaced in the future by its own machines, and believe equally that only by setting up a non-mechanical community in this time can any of human civilization be saved from that menace.

"But they could not set up such a community without the necessary money for support, twenty millions at least. They thought that they might get this amount from you but knew you would not give it unless you were absolutely convinced, as they already were and are, that such a machine menace would imperil men in the future. They determined therefore to convince you utterly by pretending to take you into the future to see the machine peril for yourself!

"Father's society numbers several hundreds of people, as he told you, and they joined together in the necessary work. The first thing we did was to find some stretch of land on the lake's edge not too far from Chicago, which would have no sign at all of human civilization or structures, and which would have the same general appearance as the landscape at Chicago would have if there were no buildings or people there.

"We found such a place not too far north from here, a beach with a green plain running inland. There was no sign of human buildings or presence there yet it could be reached in an hour by plane, since it lay on a barren part of the Wisconsin coast. The place being found, the next step was to prepare it, and for several months we joined in the work, constructing the supposed underground city that you saw there."

"But I can't believe that!" Grant Perry exclaimed. "Yours nor fifty societies could not have constructed that vast underground city with its thousands of corridors and rooms!"

Edith Loring shook her head. "Grant, you got an impression of a vast under-city from the hundreds of shaft-mouths you saw on the plain. It was the impression father and the rest planned to give you, but the city didn't exist! Those round holes in the plain were only dug for a few feet into the plain, just enough to make them appear as so many well-mouths. Only one of them, the nearest to the beach, the one you entered, was of more than a few feet depth."

"But suppose I had gone near any of the others—it would have given the whole thing away then and there?" Grant said.

"You couldn't have gone near!" she answered. "If you'll think you'll remember that your movements were directed from first to last either by the Masters whom you thought had deadly beams, or by father."

"But we did go down into that one shaft," Grant Perry insisted. "We did see one great cell."

AGAIN she shook her head. "Think back, and you'll recall that all you saw was the shaft we went down, the corridor leading from it for a few hundred feet, and three rooms along that corridor, one in which you glimpsed humans serving the Masters, another in which was the Master-Who-Thinks and another the supply-room in which you hid. You saw many doors, you *inferred* rooms behind them, got the impression of a vast under-city of numberless corridors and rooms, but that was all you *saw*, and that was all there really was!

"Behind the other doors was—nothing at all! Even so, it took us months just to prepare and wall with metal that shaft and corridor and those few rooms. Also we had to prepare machines and costumes, for some of us were to play the part of human slaves and some to play the part of Masters.

"The Masters that you thought living machines were only cubical boxes of metal in which a man could hide! It was possible to see out of them and to move in them by working pedals connected with the wheels beneath them. Also the man inside could speak through a diaphragm that made his voice toneless and metallic. The Master-Who-Thinks was simply a big metal hemisphere in which a man was hidden—in fact it was Dr. Dwale who was inside.

"Our society prepared all that," Edith Loring continued, "and though it took us much work and more than a little money, we considered it an investment from which we would gain twenty millions to be used to establish the society's non-mechanical community. When we had everything ready father came to you and offered to convince you of the need of such a community by taking you into the future with the time drug.

"You consented to go and when you came over to the society's rooms took the drug, the red liquid. Father's flask held only colored water but yours held a drug that was harmless but that produced unconsciousness almost instantly that lasted an hour or more. You took it, became unconscious, and thought it was from flashing into time.

"No sooner were you unconscious than father and Dr. Dwale and Gunnett bundled you up like an invalid and rushed you down to a plane waiting. The plane flew north and landed you on the beach near our fake under-city, and then went on to keep from being in sight. Dr. Dwale and Mr. Gunnett went on down into the under-city where the rest of us were waiting, ready to play our parts.

"When you showed signs of waking out on the beach, father pretended to be waking also. He managed it that you walked up to the ridge and saw the hundreds of openings in the plain. Before you could investigate them I, who had been waiting for you two to appear, ran out from the shaft-mouth as though in flight. When I spoke I used a changed, distorted kind of English, of course, as we all did. We had rehearsed everything so often!

"The two pseudo-Masters came out at once after me and I pretended their blue beams were deadly, so they could capture us. They did so and examined you and father, throwing your time drugs in the grass as planned, since had you retained them you would have tried to escape simply by taking the drugs. They took us back then and down into the one real shaft among those hundreds of faked openings.

"They took us along the corridor and of course the cringing humans you met, and the dozen or so Masters you saw down there, were simply adding to the impression of a swarming, populous under-city. The Master-Who-Thinks ordered me taken away, and then when you were taken Birk pretended to kill your Master guard. All he did, of course, was to crumple in the hemisphere on top and after that the man inside the cubical body remained inactive."

"Birk!" exclaimed Grant Perry, interrupting her. "You said the blue beams weren't deadly yet Birk was killed before our eyes!"

Edith Loring smiled, stepped to the door to call someone outside. A stalwart young man in modern clothes appeared with an embarrassed grin on his face, whom Grant recognized as Birk.

"My brother, Burke Loring," Edith said. "He died realistically enough, but it was all acting. You see, we had decided that you should not stay long down there in our faked under-city lest some slip disclose the truth to you. And we thought that by making it seem that you and father and Burke were rescuing me, you would be less liable in the heat of action to doubt the reality of it all.

"So Burke hid you two in the supply-room, came then around the corridor—it ended around that turn—where I waited. The Master who discovered you in the room and the one who apparently killed Burke with his beam and the pursuit and our escape up and toward the drugs—it was all planned. And when you had taken the green drug and were becoming unconscious, I was torn from you to account for my not being with you when you got back to your own time, as you thought. "Of course," Edith Loring added, "as soon as you were unconscious the plane came, you were loaded into it as before and rushed south to wake in Chicago in the society's rooms. Burke and I came in the plane too, with father and Dwale and Gunnett and you."

Grant Perry's mind was whirling as she finished. "And it was all faked, from first to last," he said slowly. "Time drug, under-city and Masters!"

"It was," said Robert Loring, not without dignity. "I do not apologize for it, Perry. I considered and still consider the deception justified by its end, by the work the society could have accomplished with those twenty millions."

"Faked," repeated Grant. He gazed into Edith Loring's face. "And I was playing the hero, trying to save you from the machine monsters, and you laughing inwardly at me all the time."

"I wasn't!" she denied, her eyes filling. "You were a hero, Grant—to you those blue flashlight beams were deadly peril and the Masters real and terrible. Yet you braved them to save me and it's why I couldn't go on without telling you the truth—couldn't bear to see you hurt by thinking you had left me there to torture—couldn't—"

But Edith's sobbing voice was stilled abruptly against Grant Perry's shoulder as he gathered her close again. He looked up in a moment, thrust the packet and sheet in his hand toward Loring.

"You get the twenty millions anyway, Loring, and I don't hold the thing against your society."

Robert Loring's face flamed. "Grant, you mean it? It means the realization of our society's dream after all—the establishment of our community—"

"Go ahead and establish it," Grant Perry told him, "but leave one of your society's members out of your plans."

"Leave one of our members out? You mean—"

"I mean Eda—Edith. She's going to stay right here in Chicago."

THE END

For the January Issue

In addition to "The Duel On The Asteroid" by P. Schuyler Miller and Dennis McDermott and "Empires Out of the Earth" by Sidney D. Berlow We Offer

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THESE STORIES AND OTHERS IN THE JANUARY, 1932, WONDER STORIES On All Newsstands December 1.

The *Andromeda* Menace

By JOSEPH F. HOUGHTON



(Illustration by Paul)

As they drew nearer, they saw that the rear of the *Andromeda* was a mass of wreckage. They could see also the fiery mass whirling less than a million miles ahead of them.



HERE was an undercurrent of nervousness among Earth employees of the Solar Navigation Lines in Keribut, on Mars. For Jud Anson, the cynical, sarcastic general manager, had cancelled his reservations on the *Cygnus* and had notified the local officials that he would wait for the *Vela* to sail.

"It's the *Andromeda* he's worried about," Barnoma, the huge, eight-foot Martian chief of the loading crew confided to Jimmie Mabry, navigator of the freighter *Sirius*, as they watched the huge cranes dump radium ore into the gaping forward hold of the space ship. "Jud Anson knows that he'll lose the passenger business between the two planets if the *Andromeda* noses into atmosphere over New York ahead of the *Vela*."

Jimmie Mabry nodded. "Mawson of the Space Transport Service, claims the *Andromeda* is the fastest ship on the space lanes, Barno," he answered. "He stated in an interview that the *Andromeda* will average not less than ten miles a second from atmosphere to atmosphere. If he's right, she'll beat the *Vela* into New York by a week or more."

"Aye, and Mawson is generally right," the Martian replied. "He makes no claim that he cannot back up. He's a very smart man for an earth being."

A boy wearing the messenger uniform of the Solar Lines came running toward them.

"Mabry, navigator of the *Sirius*?" he asked.

Jimmie Mabry nodded, took a sealed envelope from the boy and signed the receipt book. Breaking the seal he drew out a note.

"James Mabry, Navigator, freighter *Sirius*."

The navigator of the freighter *Sirius* will present himself immediately before the general manager at the office of the local agent at Keribut. Do not delay.

Jud Anson."

"Humph," Mabry grunted. "Wonder what he wants." He whistled to a short, chunky, uniformed man standing near the loading crane. "Got a call from Anson, Horan," he explained when the man answered. "You're on watch. Keep your eyes open."

First Assistant Navigator Bill Horan snapped to salute with a wry grin.

"Hope you come back all together, sir," he answered. Mabry looked at him narrowly. "Why?" he asked.

"Is there something up?"

"I don't know for sure, Jimmie," Horan replied soberly, "but Commander Blair just came from a session with Anson, and he looked pretty glum."

"Thanks for the tip," Mabry laughed. "If I don't come back though, you'll have to handle the *Sirius* to atmosphere. Think you can do it?"

"Surest thing in the skies, you know," Horan replied. "Just give me the chance and I'll beat the *Andromeda* into New York."

JUD ANSON was alone in the local agent's office when Mabry walked in. Anson was large for an Earth man. Six feet three inches, broad of shoulder, large waisted, double chin and bushy haired. Thick lips that twisted satirically when he talked. Small, pig-like eyes set deep under thick eyebrows. He looked at the lean, wiry bodied navigator and nodded as Mabry walked toward the desk.

"Mabry?" he asked. "Good. You're prompt. I like to see a man prompt. You're a navigator. A good one from your record. I suppose you know the A rule?"

"Yes sir," Mabry answered. He wondered where this would be leading.

"Hope you do. And I hope you know how it's to be interpreted. You've been with us eight years. Might be mixed up like the commander. What are your duties as laid down by the A rule?"

"The duty of a navigator on an interplanetary ship is to guide the ship safely through space, to follow the rules of space as laid down by the National Council, and to obey the orders of his superior officers," Mabry repeated the rule word for word.

"Right," Anson nodded. "But what I'm getting at is this. Suppose the orders of your superior officers and the rules of the National Council conflict? What would you do then?"

"I would follow the rules as laid down by the National Council, sir," Mabry answered.

Jud Anson rapped his knuckles on the desk. His lip curled.

"Wrong, all wrong, Mabry," he growled. "You have no more brains than your commander. Orders come first, remember that. Now answer my question again."

"I would follow the rules as laid down by the Na-



JOSEPH F. HOUGHTON

ALTHOUGH the conquering of interplanetary space will undoubtedly provide much of adventure and exploration to stir the better qualities in men, it will also arouse much that is less commendable in us.

Every new land that was opened by the white race saw greed, cruelty, and slavery as part of the necessary process of becoming civilized. This may be expected to prove true also when other planets are opened to our exploration. And if these planets contain materials valuable on earth, a merry and bloody scramble may be expected to take place in the dividing of the spoils.

Mr. Houghton senses very clearly what may happen. And in this story he has given us an intimate insight into how interplanetary travel may affect our lives and civilization. He gives us an intense story here of not only greed and savagery, but also of heroism and self-sacrifice on the far-flung interplanetary space lanes.

tional Council, sir," Mabry repeated.

A puzzled scowl came to the general manager's face. He glared up at the man who dared to disagree with him.

"Are you dumb, Mabry?" he snapped. "Listen here. Rules are made to be broken. Orders are given to be obeyed. Orders come first on our ship, always. Remember that if you intend to continue in your present berth."

"The rules of the council are supreme, Mr. Anson," Mabry insisted. "I prefer to obey their rules."

Anson snorted. A harsh laugh grated from his throat as he leaned over the desk and pointed a fat finger at Mabry.

"If that's your opinion. I'll get right down to cases, Mabry," he snarled. "The Solar Navigation is fighting for its life. And it's up to all officers to obey orders to the letter, no matter how many rules are broken. Understand that! You have an important position on the *Sirius*. It's a good job. Lots of men would like to have it. And we'll give it to one of them if you refuse to obey orders. Now get back to your ship and do as you're told!"

Jimmie Mabry nodded and walked out. Anson's threat did not disturb him. He would obey orders, but he would also abide by the rules of the National Council. Perhaps the orders and rules would never conflict, but if they did he knew what he would do.

Horan was waiting near the loading crane when Mabry returned to the freighter.

"A special from the Inter. Radio," the assistant said handing Mabry an envelope. "Came just after you left. Copy to all officers. I signed for yours."

Mabry broke the seal and drew out a typewritten sheet. TO ALL OFFICERS, INTERPLANETARY SHIPS, MARTIAN LINES OF SOLAR NAVIGATION AND SPACE TRANSPORT SERVICE. NOTICE—

Course of mass of burning gases thrown off by the Sun on November twenty-eighth, has been charted and checked by stations A Earth, K Venus, F Moon, and P Mars. Orbit of this mass will intersect plane of route Keribut and New York liners about February first to sixth, at intersection of angles Kp 15 degrees 18 minutes, Fp 32 degrees. This mass has an estimated temperature of five thousand degrees Centigrade, and all ships are warned to regulate their power so they will not be in this location between the above dates.

(Signed) COLETERNA,

Chief Officer, Station P, Keribut.

"Kp fifteen and eighteen, Fp 32, about three hundred hours out," Mabry mused making a swift mental calculation. "The *Vela* and *Andromeda* will be beyond that location by the first, but we'll be pretty close by the sixth. Perhaps that's why Anson stayed," he said aloud to Horan. "He probably wants to get a look at that hot spot."

"Might be," Horan replied. "Did he rake you over the coals, Jimmie?"

JIMMIE Mabry frowned and glanced at the assistant thoughtfully.

"What would you do if you received orders from Anson that conflicted with the rules of the National Council, Bill?" he asked.

"That's easy," Horan replied. "I'd forget to read the orders."

"Humph, might be a good idea at that," Mabry grunted. "Better get Wilson and Petrie, Bill, and check the instruments. We're leaving tomorrow night."

Jimmie Mabry glanced lovingly over the huge space ship as Horan headed for the elevators at the center door of the freighter. He was proud of his position on that bulky frame of metal. The *Sirius* was the crack freighter of the Solar Navigation Lines, and the largest ship sailing the space lanes out of the port of New York. Fifteen hundred feet long, two hundred feet wide, four hundred and ten feet deep, built especially for cargo service between Earth and the neighboring planet of Mars.

Twelve hundred feet of the freighter's length, its entire width, and three hundred and eighty feet of its height were given over to cargo space. Three hundred feet at the stern, as in all space fliers, contained the fuel tanks and motive cylinders that drove and guided the huge craft on its journeys between the planets. Her motive power was liquid oxygen combined with gasoline exploded in huge cylinders, the recoil driving the huge mass of metal rocket-like through space.

The ten feet above the cargo space and ahead of the motive cylinders, was the zone of safety. Here were stored the life boats, small space fliers a hundred feet long capable of holding ten persons each, and with a sailing radius of ten million miles. And here were kept the outside suits, thick asbestos covering supplied with oxygen tanks, and used by officers and crew when necessary to work outside the ship while between atmospheres.

Above the safety zone was the operating part of the ship. Here were the quarter deck, the officers' rooms, crew's quarters, mess halls, hospital and recreation rooms. And farther back the power room from where the chief engineer and his staff of electricians and mechanics directed the operation of the huge dynamos, pumps, and motive cylinders that controlled the freighter.

Above the quarter deck at the forward end, rose a glass enclosed turret forty feet square and ten feet high. This was the navigation room, and it was here the navigator and his assistants held sway after the huge ship left atmosphere. The navigators' control of the ship was absolute on the long journey between the planets, not even the commanders on the quarter deck below could cancel an order when given by them. They were the pilots of the space lanes, responsible for the ship and its contents.

They were under no rules except those laid down by the National Council. But these rules were rigid, had to be abided by at all times. And the council dealt harshly with those who broke its rules.

CHAPTER II

Sealed Orders

ONE hundred and eighty hours after his interview with Jud Anson, Jimmie Mabry leaned back in his chair at the navigation desk in the turret of the *Sirius*, and watched an oldish, deep lined face appear on the vision screen in front of him. By his side Bill Horan, his eye glued to a solar sextant, was shooting the angles of the Sun and Venus, while farther along Joe Petrie took a check on the course of the *Vela* coming up abreast of them though over a thousand miles to their right.

As the face on the screen grew plainer, a voice came from an opening in a panel at the side of the screen.

"Vela, Tom Hasley speaking," the voice said. "Hello, Jimmie. "Fourteen degrees and ten minutes I make the check. You're an hour behind your schedule, mister. Better shoot a little more gas."

"Fourteen degrees ten minutes is right, Tom," Mabry replied looking at the check sheet Petrie handed to him.

"Yes, I know we're running behind. Doing it to keep away from that hot spot thrown off by the sun. How's the old Vela sliding this trip?"

"Sliding great, Jimmie. We're shooting hard to get beyond the orbit of the hot spot before it hits our plane. We'll break the record this trip."

"Break your own record probably. But the *Andromeda* will set another one for you to shoot at. She's fifteen hours ahead of you now."

"And we'll beat her into New York by a month," Hasley laughed. "Haven't you heard the news, Jimmie? Got your sealed orders yet?"

"No. What's up?"

"You'll learn soon. Can't say any more, but I wouldn't be surprised if even the *Sirius* beat the *Andromeda* to atmosphere."

Mabry grunted. "Not unless she breaks down. And that won't happen unless—" He broke off, looked at Hasley queerly. "And Anson was in Keribut," he finished.

A crooked grin came to Hasley's face. "What if he was?" he asked.

"Nothing," Mabry answered.

"Nothing is right, Jimmie," Hasley replied soberly. "Better forget that Anson was in Keribut or you'll get us all in bad. What Anson does needn't concern us."

Mabry shrugged his shoulders. Hasley was right. It did not pay to talk about the general manager or what he was doing. Others had found that out.

"Got many passengers?" he asked.

"Eight hundred and twelve, all Earth people," Hasley replied. "The Space Transport is handling the Martian delegates to the Interplanetary Congress. Anson tried to get them but Mawson beat him out."

"Which didn't help Anson's temper any," Mabry grunted. "I understand you've got the general manager as a passenger this trip."

"Don't know. I heard he was going to be on, but he's not at table for his meals, and Commander Peters told me to mind my own business when I inquired about him. Peters is bothered about something."

"Anson's probably space sick and staying in his room."

"Maybe, but he's keeping his family and secretary with him if he is. Well, got to snap off, Jimmie. Commander's calling. See you in New York."

The face on the screen disappeared. Mabry threw off the switch and turned to Bill Horan.

"Did you hear what Tom said, Bill?" he asked.

"Yeah," Horan drawled. "Something's going to happen on the space lanes, but I reckon we don't want to know anything about it."

"Not unless we run into it."

"Huh. If Anson's had his hand in it there won't be anything left to run into," Petrie snorted.

The light of the quarter deck telephone flashed. Mabry shifted his position slightly and answered the signal.

"REPORTS, Jimmie," came from the phone.

"Right, sir," the navigator answered. "Checked at 4:45, on course, running one hour late. Vela passed at 5:10. Hasley navigating. Small star-like object to angle eighteen degrees right appeared at 3:30. Not charted. This is probably the burning gases reported by station P before we sailed."

"Thanks, Jimmie." The voice of Commander Blair seemed husky. "Keep your eye on that mass. We don't want to run near it. Have you heard anything from the *Andromeda* since she passed?"

"Nothing, sir. Hasley thought they would pass the *Andromeda* soon, but I don't see—"

"Orders, Mr. Mabry," Blair broke in. "These are sealed orders received as we were casting off at Keribut. Listen close and repeat."

PRIVATE, TO COMMANDER AND NAVIGATOR OF THE FREIGHTER *SIRIUS*. NOT FOR ANYONE ELSE. FROM NOW ON—

Note position of Solar Transport Liner *Andromeda* when passing second time. Get angle variation, if any, from its charted course. Estimate movement relative to you and note your own movement. Estimate drift of liner, if any, and direction. Note pull, angle, distance, and drift of all bodies that make attraction. Note indications of life inside or outside of ship. And anything else you may consider pertinent. This special report to be brought direct to general manager by commander and navigator of the *Sirius* on arrival in New York. DO NOT SPEAK TO THIS SHIP."

Mabry's hand moved swiftly over a pad on the desk, copying the order as the commander read it off. He repeated it back.

"All right, you've got it," Blair answered. "And underscore that last sentence, Jimmie."

"Any explanation on that, sir?" Mabry asked.

"None. You know what sealed orders mean."

"Yeah, obey and forget you ever got them," Mabry grunted. "But if the *Andromeda* is in distress we should speak to them, sir."

"Yes, according to the rules, Mr. Mabry."

"And we are abiding by the rules, sir."

"You are following your orders, Mr. Mabry!"

Mabry smiled grimly. He saw now the reason for Jud Anson's questions in the agent's office at Keribut. And what had been a suspicion when Mabry talked to Hasley, now grew into an almost certainty. Jud Anson would never let the *Andromeda* beat the *Vela* into New York if there was any way he could cripple and hold back the Space Transport liner. And Anson must have had his plans laid when he was questioning Mabry about the orders and rules.

And rules or no rules, Jimmie Mabry feared that the *Sirius* would never speak the *Andromeda*. For if he thought it necessary, Commander Blair would order Chief Engineer Bascom to put the dynamos out of commission. And without current for the radio and vision they could not speak the passenger ship.

"Very well, sir," he answered Blair. "But I am following the orders under protest, Mr. Blair. By the way that reads, Anson must be expecting something to happen to the *Andromeda*, and if he—"

"Mr. Mabry!" Commander Blair's voice snapped

sharply. "General Manager Anson has a plan for lowering the schedule of the *Sirius*, and to further this plan he sailed with us instead of waiting for the *Vela*. He is now on the quarter deck listening to your report!"

"And he is pleased to learn Mr. Mabry's position on sealed orders," the snarling voice of Jud Anson came through the phone. "He will also see Mr. Mabry in the main office at New York when the *Sirius* lands!"

There was a snap as Blair broke the connection. Jimmie Mabry grunted. He was sure in for it now. Anson would discharge him on arrival at New York, and would probably arrange it so the navigator would never get another position on a space ship.

"You're in bad now, Jimmie," Horan growled. Both of the assistant navigators had been listening.

"You sure are," Petrie grunted. "Better resign while you've got the chance."

MABRY nodded. He was thinking of that. He could resign on the ship, turn control over to the assistants, and have a clear record when they arrived at Earth. That would be one way to beat Jud Anson.

But that would leave the *Andromeda* to her fate. And Mabry was sure now that Anson had caused something to happen to the passenger ship of the rival line; something that would leave the *Andromeda* disabled in space. Perhaps timed so she would be drawn into the mass of burning gases from the sun and destroyed. Leaving no clue to what happened. Jimmie Mabry's mouth set in a straight line and his eyes hardened. He would stick it out. And in spite of the sealed orders he would not pass the *Andromeda* without learning her condition.

For the rules of the National Council were strict on that point. No ship was to pass another in space without speaking, and no ship was to leave another in distress without doing all in its power to bring the ship into a planet port or to rescue its crew and passengers. But he would have a job to keep the dynamos on the *Sirius* working.

One hundred and twenty-five hours later, Jimmie Mabry turned from the forward end of the turret where he had been studying a fiery mass in the sky almost dead ahead on their course. It was the burning gases thrown off from the sun, and the heat from the mass was beginning to register on their instruments.

"Same amount of power, Bill," he told Horan. "She's crossing our course about ten hours ahead. We've felt it about all we're going to."

"Hope you're right," Horan replied. "That thing is pretty hot, Jimmie." He glanced at a chart on the desk in front of him, then looked up as a light glowed on the engine room phone. "Bascom wants to talk to you, Jimmie," he said.

Mabry dropped into a seat at the desk and answered the signal from the power room.

"Bascom speaking," came over the phone. "We are having trouble with one of the dynamos, Mr. Mabry. The bearings are burning out and I'm afraid we'll have to put it out of service."

Mabry stiffened, then smiled grimly. What he expected was coming. He must keep those dynamos working some way.

"And I suppose that's the dynamo that supplies current to the radio and vision, Mr. Bascom?" he asked.

"Why yes, Mr. Mabry. Were you expecting trouble

from this machine?"

"I was, little man." The line on Mabry's jaw hardened. "Now listen very carefully, Mr. Bascom, and be sure to get this right. For I would hate to come down to your power room to see that my orders were carried out. Are you listening?"

"Yes, Mr. Mabry. But you must not expect us to do the impossible."

"Distress call, Jimmie!" Bill Horan whirled from his chart toward the radio receiver which was clattering out a code call. He snapped open the sender and answered.

"Just a minute, Mr. Bascom," Mabry ordered. He turned and switched on the vision. But nothing showed on the screen. "Not close enough to see, Bill," he said. "Did you get her?"

"*Andromeda*," Horan answered. "Disabled and drifting. Explosion in fuel tanks. Being drawn toward the hot mass."

"That's less than ten hours run with our present power," Mabry answered. He turned to the engine room phone. "Bascom!" he snapped. "We have received a call from a ship in distress, and it is necessary that the radio and vision be continued in service. You will see that this is done. And apply full power to the motive cylinders."

"Mr. Mabry, have you gone crazy?" Bascom demanded. "You know, sir, our sealed orders forbid us to speak that ship. And Mr. Anson is aboard."

Jimmie Mabry laughed. Perhaps he was crazy, trying to buck Jud Anson. The general manager would leave no stone unturned to send Mabry to prison when he learned the navigator had disobeyed his sealed orders. But Mabry had gone too far to care what Anson did. He was going to speak and save the *Andromeda* if it could be done.

Mabry knew that, with Anson aboard, most of the officers would follow the orders of the general manager. But his own assistants, he was sure, would stand by him. And with them back of him, Mabry knew that he could circumvent any move made by Anson.

For the navigators could not be replaced. There were only four aboard. Blair could navigate, but the commander could not stand all watches to atmosphere.

"Mr. Bascom, I had no idea you received a copy of those sealed orders," he snapped into the phone. "They were addressed to only the commander and navigators. And tell me, little man, how you know the distress call is coming from the ship mentioned in those orders?"

CHAPTER III Mutiny

SNAP! The engine room phone went dead. Mabry's eyes narrowed. Bascom was defying him. Backed up by Anson, probably. He turned to Horan as the radio sputtered and stopped.

"No current, Jimmie," Horan said.

"Bascom's put the dynamo out of commission, Bill," Mabry answered. "What did you get?"

Horan passed Mabry a sheet torn from the receiving blank.

*Andromeda, Passenger, Keribut and New York.
An Explosion In Fuel Tanks Has Torn Off Rear
Number Eight and Ten Sections of Ship. We Can-
not Move or Guide. Bulkhead Bent But Holding.
Drifting Off Course. Being Drawn Toward Mass*

of Burning Gases from Sun at Angle Andromeda F Eighteen Degrees Left. Getting Hot. Pull Plus Twelve, Getting Stronger. Present Location FP—"She broke off there, Jimmie."

Mabry rose to his feet, then dropped back to the desk. He was tempted to go direct to the power room. But the commander was the buffer between Bascom and the navigators. And Blair should know how things stood. If Blair refused to act, then he would visit the power room himself. He switched on the quarter deck telephone.

"Mabry," he said when the signal was answered. "Radio and vision not working. Mr. Bascom claims that the dynamo is out of commission. We have signals from a ship in distress. Will you please see that we get current for the communications?"

"Sorry, Mr. Mabry, but we will not need the radio and vision at the present time," Blair answered.

"I will be the judge of that, Mr. Blair."

"I can do nothing to help you, Mr. Mabry. I am no machinist."

"Then I shall see Mr. Bascom personally."

"Very well, sir. But it will be on your own responsibility. You will be going against Mr. Anson's orders."

"I do not recognize Mr. Anson's orders, sir!"

Mabry snapped off, rose from his chair and turned toward Horan. Then the door of the turret opened and Joe Petrie and Jerry Wilson came in.

"Blair sent us up to take over, Jimmie," Petrie said. "He wants to see you below."

Mabry nodded. "Did he give you any orders?" he asked.

"Yes sir. He told us to swing off course twenty-five degrees right, hold that for thirty hours, then get back on course."

"And are you going to do that?"

"Not unless you sanction it, sir."

"Good! Now listen close, all of you. The *Andromeda* is up ahead, in trouble. And she's being drawn toward that hot spot from the sun. I'm going below, get current up to the communications, and get more power behind us. I want the *Sirius* kept on her course and a close watch kept for the *Andromeda*. Mr. Horan will be in charge until I get back. Take orders from no one else. Understand?"

"Yes, sir. We're with you, Jimmie."

Mabry headed for the stairs leading below. He would allow no one or nothing to stop him now. And as he landed on the quarter deck he was faced by Blair and Anson.

"You are under arrest, Mr. Mabry," the commander snapped. "You will go to your room at once and stay there."

Mabry's eyes narrowed. He glanced toward Jud Anson. A hard smile curled the general manager's lips.

"By whose authority and the charge," he demanded.

"By my authority," Jud Anson sneered. "And the charge is mutiny, Mabry. Get out of that if you can."

Mabry nodded. Anson had struck. And Blair would back up the general manager even though Anson had no authority, under the law, aboard the *Sirius*.

But Mabry was not going to submit to arrest. While he knew that Horan, Petrie, and Wilson would find and try to save the *Andromeda*, without current for the radio and contact plates they could do nothing but stand by,

watch the passenger ship drawn into the hot mass and destroyed. He eyed the commander grimly.

"MR. ANSON has no authority on this ship, Mr. Blair," he stated evenly. "You should know that. And there is a passenger ship ahead of us, drifting, helpless. We cannot get in touch with her unless we get current for the radio and vision, and we cannot help her unless we have current for the contact plates. I am going to get that current, Mr. Blair. And don't try to stop me!"

He turned to the door of the passageway leading to the power room. Anson held up his hand as Blair started after him.

"Let him go, Mr. Blair," the general manager said. "I'll talk to Mr. Bascom."

He moved to the desk, snapped on the power room phone.

"Mr. Bascom," he said when the signal had been answered. "Mr. Mabry is headed toward the power room after current for his communications. Please see that he doesn't get it. And Mr. Bascom. It would please me mightily if Mr. Mabry should injure himself. Not being used to that part of the ship he might get against something dangerous."

"Yes sir," came the reply. "He might. I'll see to it, Mr. Anson."

Bascom was turning away from his desk when Jimmie Mabry strode into the power room. The little engineer grinned up at him.

"How are the repairs coming to that dynamo, Mr. Bascom?" Mabry asked.

"I'm sorry, Mr. Mabry, but we shall not be able to repair that dynamo until we arrive in New York," Bascom replied. "You can see it for yourself."

"Very good, Bascom. I'll take your word for that. But we must have current for the communications. Can't you switch onto another dynamo?"

"Not very well. All the other dynamos are in very bad shape, and we—"

"The same as you'll be before I'm through with you!" Mabry snapped. He reached down, seized Bascom by the collar and shook him as he would a rat. "Look here, little man. We want current and we want it now. Do we get it?"

"You can't get it," Bascom snarled, trying to break away. "The dynamos are damaged, I tell you! We couldn't give you current if we wanted to. Turn me loose!" He gave a howl of surprise and pain as Mabry heaved him against the steel walls of the room.

Four officers came running in from the dynamo room, electricians from the lightning flash insignia on their shirts. Mabry whirled toward them.

"What's wrong with your dynamos?" he demanded.

The four men looked at each other, then at Bascom who was scrambling to his feet. The chief engineer glared at the navigator.

"Go in and find out what's wrong with them," he snarled. "Take a look at them. We're running the lights, air machines, and service pumps on batteries. Go ahead if you think you can get current."

Mabry ignored Bascom. He was watching the four electricians. "I would like an answer," he said.

One of the electricians stepped forward.

"We do not recognize your authority, sir," he answered. "We are under Mr. Bascom. You will have

to get your information from him."

"Mr. Bascom is under arrest," Mabry informed them. "You," pointing to the man who had spoken, "will find Mr. Towers, the assistant, and bring him here. The rest of you get those dynamos working. Or you'll go outside!"

The electricians shook their heads.

"You are not arresting Mr. Bascom, sir," the spokesman said. They moved toward the chief engineer and stood in front of him.

Bascom's lips curled with a sneer. "Satisfied now, Mabry?" he asked, "or do you want to go further?"

Jimmie Mabry laughed, a harsh, reckless laugh. So that was Bascom's game. They wanted him to fight, get him in deeper. He laughed again as the five men stared at him. Then he thought of the passengers on the *Andromeda*, being drawn to certain destruction in the heat from the burning gases. Current would save her. The laugh died on his lips. His eyes hardened. He must get current into the contact plates and communications some way. And if he had to fight for it, he would fight.

HE STEPPED toward the electricians. His fist flashed up, crashed into the leading man's jaw. He knew that he stood but little chance of coming out whole. A sharp pain ran through his arm as his fist connected. The electrician staggered back against the desk. Then the other three rushed him.

For a moment it was anybody's battle. The three electricians were in their own way. Mabry got in a few good, sharp blows, driving the men back onto the cowering chief engineer. Bascom switched on the quarter deck phone, then had to dodge aside before he had a chance to use it.

One of the electricians was sent careening against the wall by a blow from Mabry's fist. Another staggered back to the desk. His hand closed on a brass rule. He picked it up, rushed forward and brought it down on Mabry's head. Dazed, the navigator staggered and dropped to the floor.

But he was up again in an instant, facing the five men. They were drawing away from him, their eyes staring toward the passageway door. Mabry turned. Bill Horan stood in the doorway, a needle-ray gun in his hand and a hard smile on his lips.

"I heard something I didn't like coming from the quarter deck, Jimmie," the assistant navigator explained. "Thought I'd come down and take a hand. Want me to pierce a couple of those fellows?"

"No, just hold them, Bill." Mabry lunged toward Bascom who was shouting into the quarter deck phone. He seized the chief engineer by the collar and jerked him away from the desk. "No you don't, Bascom," he snapped. "You're not blocking me now. Where's your assistant?"

"Right here, Mr. Mabry," a voice came from behind Bill Horan. Lige Towers, gaunt, grey eyed, moved around the assistant navigator toward Jimmie Mabry. "I've been confined to quarters, sir, because I refused to damage the dynamos. I heard the racket in here and came out. Anything I can do?"

"Yes. Put all the power you can behind us. I'm taking Bascom to the turret. He'll pass my orders on to you. See that they are carried out." He whirled

toward the four electricians. "You fellows are in bad," he snapped, "but I'm giving you a chance. I want current and plenty of it. Get those dynamos working or go outside. I'll give you twenty minutes."

The electricians looked at each other, fear written on their faces. Then they turned and dashed toward the dynamo room. Mabry turned to Bascom.

"Upstairs, little man," he ordered. "You're going to be our hostage. And you'd better pray that we get current."

CHAPTER IV

Communication at Last!

THEY met Blair and Anson in the passageway. The general manager tried to block them, was shoved aside by Mabry. At a call from Blair two officers and a dozen men came running from the crew's quarters. They stopped, drew back against the wall when Bill Horan drew his gun. Mabry, driving Bascom before him and followed by Horan, passed through the quarter deck and into the turret. Mabry shoved Bascom into a chair at the power room telephone.

"Current should be coming soon, Jerry," Mabry told Wilson who was standing by the radio. "Get in touch with the *Andromeda* soon as possible. Bascom," turning to the chief engineer, "if anything goes wrong below it's up to you to straighten it out. You've blocked us all you're going to. And if we don't get what we want, you go outside!"

The freighter surged ahead under the added impetus as more fuel was fed into the huge motive cylinders at the stern. Bascom, though furious over his treatment in the hands of the navigator, nevertheless got all the power possible out of his gas and cylinders. Mabry's threat to put him outside was sufficient to place the chief engineer on his good behavior. For Bascom had seen men sent outside the ship as punishment for infractions of discipline.

With only an oxygen tank to keep them alive, they were placed on a platform outside one of the safety doors, where the cold of space slowly and positively drew the heat from their bodies. One hour outside was sufficient to quiet the wildest man, though the body could stand fifteen hours of the deadly cold.

"Current coming, Jimmie, and she's on the vision," Joe Petrie snapped out ten minutes later. "Want to talk to her?"

Mabry moved to the screen. Two set, haggard faces were forming: Davis, navigator of the *Andromeda*, and Mawson, superintendent of the Space Transport Service.

"Freighter *Sirius*, Mabry speaking," Mabry reported. "Our dynamo broke down but is all right now. Give us your location."

"Ap one degree, Kp twenty-three degrees, Fp twenty-seven degrees," Davis answered. "We will send out red and green rockets."

"Are you going to help us?" Mawson asked.

"Right. Soon as we can get to you. Are you capable of being towed?"

"Yes, if you can contact the forward end."

"We'll look you over. Anyone killed?"

"Just a minute, Mabry." Mawson's voice seemed

harsh and strained. "Is your general manager aboard?" "Yes."

"Does he know you are in touch with us?"

"He knows we've been trying to get in touch with you," Mabry answered. "Why that question, Mawson?"

"Jud Anson had a series of bombs set that blew up our rear end," Mawson replied. "Are you still coming to help us?"

"Still coming," Mabry smiled. "I suppose you have proof of that charge?"

"Plenty. Look here." Mawson moved aside, beckoned to someone behind him. Three more faces appeared on the screen, tear-stained, fear-stricken faces. A woman and two girls. "Know them?" Mawson asked.

Mabry shook his head. "No," he answered.

"Anson's family," Mawson continued. "They were billed for the *Vela*, but in the darkness were put on us by mistake, the *Andromeda* and the *Vela* leaving at the same time. As we approached this location Mrs. Anson told us. Anson had time bombs set to explode the fuel tanks as we approached the burning gases thrown off by the sun!

"But Mrs. Anson did not know just where the bombs were set. I called for volunteers. Twenty men responded, and we shut them up in the rear number eight and ten sections, and closed the bulkhead. It was the only way we could save the passengers. They did not find the bombs, and the twenty are dead now. You'll see them floating around outside the ship, Mr. Mabry."

Mabry glanced at the men in the turret. The navigators and chief engineer were listening intently to Mawson's words. But the plot to blow up the passenger ship did not surprise them, for they knew that Jud Anson would stop at nothing to crush anyone or anything that stood in his way. And but for the mistake of Anson's family being placed on the wrong ship, the *Andromeda* would be a mass of wreckage floating through space and her passengers all dead. The closed bulkhead had saved the forward part of the ship.

"WE DID not expect you to help us, Mr. Mabry," Mawson continued. "Mrs. Anson told us that sealed orders had been delivered to you, ordering you to pass us without speaking. And the *Vela* slid by without a sign. Did Anson change his mind?"

"No, but Anson's authority does not extend beyond atmosphere," Mabry replied dryly. "The National Council makes the rules for space."

"Good boy!" Mawson exclaimed. "Tell us what you want done. We'll help you all possible."

"Have you any current? Can you set up repulsion waves?"

"Only from the batteries, and they're getting weak."

"Then you may get a bump when we contact. Be ready for anything."

"We will."

Mabry set the course of the *Sirius* toward the disabled ship. Soon the red and green rockets sent out by the *Andromeda* came into view. The vision screen still showed the set faces of Mawson and Davis, and occasionally the form of other officers who came to receive orders or present reports. They exchanged few words, those men of the space ships. Words would do the *Andromeda* no good.

Soon the lines of the disabled ship hove into sight, and the heat from the burning gases began to make itself felt. They could see the fiery mass whirling rapidly less than a million miles ahead of them.

And as they drew nearer, what he saw brought a worried frown to Jimmie Mabry's forehead. The rear of the *Andromeda* was a mass of wreckage, even the huge, thick bulkhead that protected the forward part of the ship had been bent slightly by the blast.

But it was the wreckage that bothered Mabry. Pumps, tanks, beams, even bodies, thrown outward by the explosion, were now circling the *Andromeda* at varying distance like the satellites of a planet. He must work through this to contact the passenger ship.

"Stop your power, Mr. Bascom," he ordered. The chief engineer had been silent since Mabry's conversation with Mawson. Bascom was wondering what would become of him now that Anson's plot to wreck the *Andromeda* was known.

The freighter lost speed as the fuel was cut from the motive cylinders. Slowly Jimmie Mabry worked the huge ship toward the *Andromeda*. He had to approach carefully. At any moment the larger mass of the freighter, acting on the smaller ship, might start it whirling or draw it toward the freighter's side. And he must be ready to set up repulsion waves to keep the smaller ship from striking too hard.

The door of the turret opened. Commander Blair and Jud Anson walked in. Anson strode up to the navigation desk and thumped his fist down in front of the navigator.

"Mabry, I'm warning you!" he bellowed. "The *Sirius* cannot handle the additional load imposed by contact with the *Andromeda*. "You are imperilling our lives, sir, trying to save those who are already lost."

Mabry looked up and smiled queerly when he saw Anson's choleric face.

"Thanks for reminding me of that additional load, Anson," he said grimly. He turned to Wilson. "Get in touch with Second Officer Hilton, Jerry," he said. "Tell him to stand by the dumping machines for orders. If the additional load is too much we'll dump part of the cargo."

"But you can't do that!" Anson roared. "That ore—"

"Mr. Horan, please see that Mr. Anson is made comfortable in the rear of the turret," Mabry interrupted. "And if he interferes again, put him in irons!"

Anson glared at the navigator, looked around at the other officers, met nothing but stares of hostility. He subsided and dropped into the seat indicated by Bill Horan, his huge jowls working nervously.

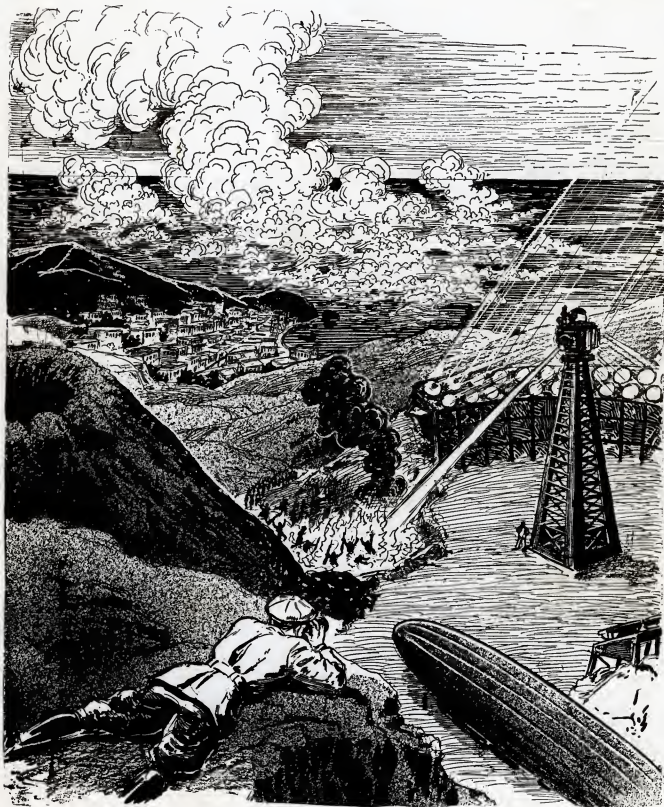
Mabry glanced at Blair. The commander's face was drawn, his lips pressed tight. Mabry knew what Blair was suffering. Blair was honest. But he had a family and had to hold his job. And he had to follow Anson's orders to hold the job.

"Commander Blair, will you please take charge of the contact?" he asked.

BLAIR looked his surprise. Then, with a sigh of relief, he dropped into a chair beside Mabry, raised a hinged lid on the desk, and placed his fingers on the buttons controlling the current running through the bands around the freighter's hull. At a nod from the
(Concluded on Page 898)

Lord of the Lightning

By ARTHUR K. BARNES



(Illustration by Paul)

The dazzling beam of light played over a uniform, and the man fell back a twisted, crumbling ash. With a horrible fascination the lone watcher saw the ray crawl over the slope.

LORD OF THE LIGHTNING

THE first intimation of the terrible catastrophe which nearly destroyed a goodly portion of South America, and which threw the world into a panic, denuding the mountainous regions of their populations and crowding the lowland cities until they became veritable festerers of disease, was in an innocent-appearing article on one of the inner pages of the *New York Globe*. This humble forerunner of news, which later occupied the headlines of the world's foremost newspapers to the exclusion of all else, ran as follows:

Ancud, Chile. AP. A sudden tropical storm of unprecedented violence recently wiped out the little fishing village of Santa Loma in southern Chile, according to reports by the few natives who survived. An unconfirmed report sets the loss of life and property as incredibly high. Subsequent volcanic activity from the long-dormant Mt. San Lorenzo completely destroyed the site of the town, rendering impossible any adequate investigation of the disaster.

Jack Darrell, star reporter for the *Globe*, was possessed of a highly-developed, sensitive instinct for locating incidents of particular value to the men of his profession; in short, Darrell had a "nose for news."

One pleasant morning in early summer, he strolled into the editorial rooms of his employers some two hours late, nodding to his acquaintances, exchanging unprintable remarks with his friends, glaring at the editors, and all the while industriously chewing a huge wad of gum. Snatching up a late edition, he dropped his six-foot bulk into his chair and proceeded to peruse it at his leisure, undisturbed by the noisy activity about him. Shortly, having complacently finished reading his own articles, he turned to the inner pages of the journal.

Less than a minute later he suddenly sat-up in his creaking chair, his face assuming a thoughtful expression, and carefully re-read a certain dispatch. Raising himself from his seat, he lazily threaded his way through the maze of desks and bustling employees to the city editor-in-chief. Calmly thrusting aside the litter of papers which, by their very numbers, distinguished the editor's desk from those of less important individuals, Darrell perched himself on the edge and thrust the newspaper under his superior's nose. With one strong forefinger indicating the article with which we are already familiar, he spoke.

"Boss, I have a hunch there's some good copy here, if

I could run it down. Can't tell what it is right now, of course, but at the very least it will probably bring a couple of columns of 'scientific.' If it turns out poorly I can pick up something else to make the trip worth the expense, if you want to send me down."

The Great Man leaned back to consider the proposition. Darrell, besides being a newspaperman of unusual ability, was a highly educated person of considerable

reputation in scientific circles. He had several scoops to his credit because of his intimate friendships among the notables of the scientific world. Hence, the editor replied,

"Well, as far as your hunches go I must admit that they have often been remarkably correct, except for that weird fluke you pulled when Dr. Borgman went away—now shut up, I know all about it—and I see no reason why I shouldn't trust you on the present occasion. You have a roving commission and I have no objections to your going south so long as you don't abuse your privileges. In any event, I think you're entitled to a little vacation of sorts."

"Oke," smiled Darrell, and hurried off to pack his typewriter and clamp on an ancient hat.

"See you next month," he belloyed over his shoulder to his envious friends, and sauntered down the stairs whistling through his teeth and several sticks of gum.

While packing his bag in his apartment, he again reviewed the circumstances of the departure of the famous Dr. Borgman and of his (Darrell's) hunch concerning the potential news value of the incident. Borgman, probably the world's greatest authority on meteorology, and with a considerable reputation in the allied sciences, had retired to an unapproachable retreat in the Rockies, and had commenced work on a gigantic structure about

which nothing was known or could be discovered.

Strange rumors made their way to the outside crediting Borgman with everything from black magic to death rays and space-cars. Darrell, his curiosity piqued, had chartered an airplane to carry him over the site of Borgman's activity. Hovering over the tiny valley, he had been able to make out a small group of buildings at one side with a huge structure resembling a large hangar, occupying the center of the rather restricted area.

Just as he was about to signal his pilot to fly closer,



ARTHUR K. BARNES

IT is curious that of the natural forces that affect our lives the most vitally, we know the least. We are, in fact, the blind subjects to the vagaries of the weather. Storm and drought, heat and cold, lightning, blizzard and disastrous floods, all act to affect our civilization, devastate our crops, paralyze our transportation and communication. Of meteorology, the science of weather control, we know but little.

If we could discover the obscure laws that determine changes in the weather, and be able to forecast changes a reasonable period ahead of time, it might be possible to work out means to protect ourselves against nature's onslaughts. Anyone who could devise a means of weather control would certainly become a savior of the race. But if that "lord of the lightning" used his power against humanity, he might well become the race's destroyer.

In this fresh and original story, Mr. Barnes gives us a picture of what might happen on the appearance of a "lord of the lightning."

several figures had rushed from the buildings, rifles in their hands, and had taken a number of well-directed shots at the plane. The latter made a hasty departure. Some hours later Borgman himself had arrived at the mountain town at which Darrell was staying. According to the government officials, the famous man had been in a terrible rage and had threatened all sorts of dire punishments if any more unprintable busybodies were allowed to violate the sanctity of his abode.

Having swept all before him in the blast of his fury, he had again returned to obscurity. Darrell, highly incensed at the doctor's remarks, racked his brains to find means of retaliation, but his efforts were set at naught by the report that Borgman had gone, bag and baggage, without a trace. A few smoldering ruins were all that remained to mark the site of his former activity. The reporter had lost the trail completely, and was forced to come home empty-handed. Weeks later he had again been startled into activity by the report that Dr. Borgman was leaving for Europe on a vacation trip. Hastening down to the ship, he had been met personally by a most affable man. The latter apologized handsomely for his untimely epithets at the time of the Rocky Mountain incident, explained that disappointment over the failure of the experiment decided him to take the trip, and even gave the reporter his itinerary. In short, Borgman was very nice about the whole affair and Darrell, although he had a good interview, was a bit downcast, since his hunch had apparently "gone floey."

It was not until the boat had left the harbor that two remarkable facts struck him. In the first place, he still knew nothing whatsoever about the nature of the experiment that failed. Secondly, and what was even stranger, the vessel on which Borgman had sailed was not Europe-bound; it was a South American coaster. However, that, as he was wont to say, was that, and the reporter dismissed the matter from his mind for the time.

Now, as he prepared to journey into the very country where, as he had reason to believe, Borgman was staying, he resolved in case he met the scientist again to extract some information from him no matter what the cost. Finished with his packing, he hurried to town, made reservations for a stateroom on the first steamer to South America, then dashed off a letter to a friend in California. Two days later he was safely ensconced on board the boat, heading for the Panama Canal.

LAURENCE THORNTON, professor of geology at one of the large California universities, wearily cast aside the last of a set of final examination papers and lit his pipe. A powerful intellect and a thorough knowledge of his chosen work had enabled this man to secure for himself this position of responsibility while yet a comparatively young man. Now, having worked long and hard during the past year, he was looking forward with anticipation to a well-earned vacation. Idly allowing his fancy to play over the high spots of the coming summer, a trip to northern California, steelhead from the Rogue River, some tuna fishing at Catalina Island, he absently opened a few letters that had arrived by the morning mail. Turning to the signatures first, he cast them impatiently aside one by one, until he picked up the last of the lot.

As he opened this envelope, a tiny slip of paper

fluttered out, a newspaper clipping. Curiosity aroused, he picked it up and read—the Chilean dispatch with which we are already familiar. He hastily searched for the signature, which caused him to sit upright with a grin slowly overspreading his face. After reading the message through, he regretfully said goodbye to his former plans, and prepared for a trip to South America. Because the closing sentences had caught his eye.

"... At the very least this should furnish you with some dope for that silly monograph of yours on volcanic activity. At best, I think this trip will bring some exciting moments, if I err not. I'll see you in Panama, I hope. Yours, Jack D."

Thornton, being one of Darrell's most intimate friends, knew very well the extent of the reporter's intuitive powers, and with such a broad hint of interesting times ahead, he would not have missed the trip for anything. Hence, he followed his friend's example and packed his bag. Then, having chartered an airplane to take him to Panama where he intended to catch the same boat on which Darrell was traveling, he finished up his affairs with the university and waited for the appointed hour.

Some days later, Thornton and Darrell disembarked at Valparaiso. By frequent application of the proverbial power of the press, they managed to secure a thirty-foot motor launch, in which they hastened down the coast to Ancud, the southernmost town of any size. Here, to their surprise, they found the population in a state of agitated apprehension, due to two more reports of terrific storms with tremendous destructive power. In each case the deluge had occurred within fifty to a hundred miles nearer Ancud, and it was perfectly obvious to the excited populace that if the storm continued moving up the coast, their turn would come soon. As a result of this perfectly logical reasoning, great numbers of people had already left northward, while everyone who remained was in readiness for instant flight. Again, in each case, and this phase of the tragedies interested Thornton most, the storms had been followed by tremendous eruptions from neighboring volcanic peaks, resulting in the complete destruction of the sites of the disasters.

Another interesting phase of the situation was found in the great number of rumors that were rife concerning the cause and the meaning of the catastrophes. The unusual circumstances gave rise to the revival of a number of ancient legends and predictions, and the trouble was ascribed to any of a half dozen native gods and devils.

The weird tales given out by the few shivering wretches who had managed to escape the full fury of the storm were even more startling than the others. Stories of awful faces leering down from the black heavens, of the gods themselves descending, even of the moon itself coming to the earth, were common at the time, and Darrell, scenting good copy, sent back a long and interesting article on the subject. Thornton, however, impatient to get to the scene of the mishaps, hastened the provisioning of the boat and soon, in spite of the reporter's wails bemoaning the loss of such good material, the two were on their way to Mt. San Lorenzo.

The actual site of the first disaster was, to Darrell at least, disappointing. Sheer cliffs loomed heavily over a miniature tidal plain, barren and lonely. No sign of

life was evident beyond the calling of the gulls sounding above the muted murmur of the sea. A wide, fanlike belt of fresh lava ran from the nearest mountain to the shore; a few faint wisps of vapor still clung to the peak. That was all.

CHAPTER II

A Lecture on Volcanoes

THORNTON, however, insisted on stopping to make a more thorough inspection so the two men anchored in the now lava-filled little bay. Next morning the geologist, radiating energy, dragged Darrell into the small boat and examined the shoreline foot by foot. Scattered all along were numerous dead fish and sea-plants. Finally beaching the boat, the men clambered ashore and, while Thornton carefully pecked away at a few specimens, the reporter moodily strolled around with his hands in his pockets. The former eventually turned to Darrell.

"Jack," he called, "did you ever stop to wonder why there should be so many dead fish cast up here?"

"Huh-uh. I never was interested in fish,—except on Fridays."

"Well, perhaps you could tell me why all these particular fish happen to be boiled," Thornton smiled faintly.

Jack stared a moment. "What the hell do you expect with a whole mess of red-hot rock dumped into the pond all at once? Or did you want them fried?" He thrust another stick of gum into his mouth.

Thornton shook his head pityingly. "My dear friend, the point is that the lava wasn't dumped in here all at once,—it flowed in gradually. The fish had plenty of time to get out into deeper waters. Yet hundreds were caught and literally boiled alive. Why?"

Darrell shrugged. "Search me. I never could understand the psychology of a fish. What's the answer?"

"I don't know," Thornton answered thoughtfully, "but I'd certainly like to. It looks fishy to me." He ducked the wad of sea-weed that his friend threw at him.

"Yeah, and my nose tells me there's something rotten in Santa Loma, too, or where Santa Loma once was." He sobered suddenly. "Let's go, if you've finished your prowling. This place gives me the 'willies' when I think of all those poor devils caught both in flame and flood."

The two friends moved up the coast in the wake of the storm and found similar conditions at each point of destruction. An occasional bedraggled and half-starved native confirmed previous impressions of the sequence of events: a violent storm and then, from ten to forty hours later, a terrible eruption from a nearby peak, long considered dormant or extinct. Thornton continued to puzzle over the dead plant and animal life, while Darrell railed at his friend continuously over his interest in boiled fish. Ten days passed, and the two men had almost worked their way back to Ancud. They were smoking one evening before their camp-fire on the beach.

"Have you noticed," asked Darrell, "that there have been very few traces of the storm itself in between the points of heaviest destruction?"

"Yes," Thornton seemed lost in thought.

"Well, hasn't that struck you as curious?"

"Not nearly so curious as this matter of the boiled

fish. It probably means simply that the storm is moving in a looping course to the north, spending itself largely on the open sea, occasionally touching the land."

Darrell sneered. "If you'd keep your mind off your piscatory problems, you'd soon enough realize that it's the most remarkable coincidence in scientific history if this storm is moving north over the sea and striking land only at points where there happens to be a village that is backed by a volcanic peak! And the matter is made no less curious by the fact that these ancient craters each erupt immediately after this rather choosy storm passes by."

Thornton grinned at the reporter. "Your point about the exclusiveness of the tempest is well taken, but the connection between the volcanic eruptions and the storm should be obvious. If you'll get out your little notebook and pencil I'll give you a lecture on the whys and wherefores of volcanoes that should be illuminating even to one of your rather limited intelligence."

"Yes, teacher." Darrell produced his copy book and settled back.

"Well," Larry Thornton refilled his pipe and lit it, "first of all there should be no question that the earth is highly heated inside. Measurements made in deep borings show that the temperature increases downward at the rate of about one degree Fahrenheit for each fifty to seventy-five feet to depths at least somewhat greater than a mile."

"Check," murmured Jack, scribbling furiously.

"The temperature must, therefore, be several thousand degrees at depths of twenty-five to forty miles. This is sufficiently high to cause all ordinary rocks to melt at the earth's surface. At great depths, however, the downward pressure on the rocks is so tremendous that their melting points are notably raised, so that there is every reason to believe that the rocks twenty-five to forty miles down are in general, though incredibly heated, not molten."

"If, then, highly heated, solid rocks at reasonable distances down in any part of the earth are subjected to relief of pressure by an earth movement, such as upward crumbling of the crust, or by readjustment of large fault blocks, those heated, solid rocks would become locally, and suddenly, molten, develop steam and gas pressure, and seek an outlet. This outlet will naturally occur at some weak spot in the earth's crust, and an old volcanic cone, if present nearby, would be the most likely scene of the new eruption."

THORNTON relit his pipe which had gone out while he talked.

"The delicate balance of all Nature's forces is well known; every school-boy understands that the slightest disarrangement of this balance will result in serious consequences before it is readjusted. Likewise with volcanic activity; the smallest movement or shift of pressure is liable to bring about an eruption. Now where is the point of greatest pressure on the earth's surface?"

Darrell looked up guiltily from his writing. "We-ell, I . . ."

"Of course," Thornton smiled. "The ocean floor, with the vast bulk of the sea constantly pressing down upon it. Assume that a few thousand tons of this water were suddenly removed from a comparatively localized point. Even such a small change of pressure would probably

result in the process I have just described as resulting in a volcanic eruption nearby.

"The fact that the two greatest volcanic belts in the world,—one extending from Hawaii through Central America, the West Indies, the Azores, and so on through the Mediterranean region and Asia Minor to Eastern India, the other nearly encircling the Pacific from New Zealand up through the Aleutian Islands and down the western coast of the Americas—are closely related to the sea seems to bear this out.

"Applying this to the case in question, it seems perfectly plain that this rather unique storm has been caused by atmospheric conditions which enable it to gather up large quantities of ocean water at a time. The resulting shift in pressure . . ." Thornton made an expressive gesture with his hands.

"Very lucid, professor," said Jack, "but it doesn't explain why this queer storm strikes only at inhabited portions of the coast. Today while you were making lunch, I ran across a tiny native village set away back from shore, and they haven't even seen a cloud for months, though they had heard of the trouble from survivors."

"Yes, I know. Neither does it explain about the boiled fish."

Darrell snorted. "You're nuts, Larry. If the storm was so severe as you suggest, it probably killed the fish when it first struck, and the bodies drifted in to be boiled afterward by the lava from the eruption. They probably figured you'd bring your own tartar sauce," he added sarcastically.

"Ingenious, but unconvincing. I never yet heard of any storm that could destroy sea life in any such quantities as we've seen these last few days." Thornton poked at the dying fire.

"Well, here's another answer,—take your choice. Suppose there was another rift,—on the ocean floor—and the molten magma burst through and trapped all the sea animals between it and the shore. Thus they'd be caught between two fires, no pun intended."

"Again very ingenious, but still not very convincing. An intense heat was applied very suddenly in this case, it is true, but I believe it occurred at the surface, because few if any of the specimens I've studied along the coast here were deep-sea fish. Most of them were shallow-water creatures and surface feeders. Besides, it seems unlikely that an incipient eruption would choose a path other than the well-defined one of the nearby volcano. Still further than that, it's a bit too much to expect that every volcanic peak along this coast would have a corresponding rift in the ocean floor. No, there's some other explanation, but it eludes me at the moment."

"You amaze me," muttered Darrell. "At least, though, since I've offered you two explanations for your fish problem, you might give me one as to the peculiarities of the storm that I've pointed out to you."

Thornton knocked out his pipe-heel into the fire. "The only thing that seems to fit the case is that it is a man-made storm. Which is impossible, I grant . . . What's the matter?"

Jack Darrell was sitting bolt upright on his blanket, fingers rigidly outstretched, staring into the fire. A strange pringle ran up his spine. "By Jove, Larry, I've got a hunch! A man-made storm . . . boiled fish . . . it doesn't all fit right, but I feel we're on the right track . . ."

Thornton frowned, puzzled. He held a tremendous respect for his friend's hunches, but man-made storms on the South American coast was a bit thick. He shrugged and bent over to pull off his boots.

"Sleep on it," he suggested. "Maybe things will seem clearer in the morning." Thornton reached for a stick to scatter the fire, but his hand stopped in mid-air. From the beach came the sound of slowly shuffling footsteps. Darrell quickly rolled over beyond the range of the firelight while his friend rose to his feet, hand on gun.

A vaguely wavering white figure toward the shore resolved itself into a lone man. In the last stages of exhaustion, with blackened tongue hanging hideously from his mouth, he staggered to the fire and pitched forward on his face. Though he was covered with dirt and sweat and hair, yet the man was white, and that strange bond which unites all men of the race in the farthest corners of the earth prompted Darrell and Thornton to hasten to the poor fellow's assistance. After working over him for some minutes with water and stimulants, he regained consciousness. He sat up suddenly.

"Are you the two fellows w'at's studyin' these volcanoes?"

Thornton nodded. "Yes. What's up?"

The stranger gasped for breath and said, "Ancud's wiped out, that's what's up!"

"Ancud!" burst out Darrell. "Why, that town's got several thousand people in it."

"Did have, you mean. They ain't there now." The man made a significant gesture with a grimy forefinger. "And I seen it all."

DARRELL and Thornton looked at each other, their eyes glittering feverishly. The former grabbed for his notebook while the other administered another stimulant. "Do you think you can tell us the story—from the beginning, I mean?"

"Sure. That's what I come these fifty miles for—so's you c'n catch the dirty devils."

Again Darrell felt a thrill run up his back as he glanced at his friend.

"Go ahead. And take your time."

"Well, about three days ago, or maybe it was four, somethin' funny began to happen in the ocean just outside the port. From shore it looked like it was beginning to boil, and all the fishing smacks that came in reported alike—the sea was a-boilin'. O' course, all the people got in a big sweat about that, especially the natives, but when a huge cloud-bank began to gather over the town everybody went wild.

"Hundreds of 'em left; hundreds more figgered to leave as quick as possible. But a day an' a night passed an' still no rain, so things began to quiet down a bit. Folks even began to go about their business, though a bit cautious-like yet. But that night, 'long about one o'clock in the morning, I woke up. Over toward the mountains I could hear a faint humming noise, rather like an airplane, only more muffled. I went outside to look around. You know the mountains ain't more 'n half a mile or so from the sea right there around Ancud. Well, that great black cloud-bank had sunk lower and lower till it stretched from the peaks to the fog at sea and closed the town in like a trap. It sorta stifled me . . . like I could feel unseen hands . . ."

The stranger's voice faded away to a whisper and his eyelids fluttered. Thornton worked a hypodermic syringe and in a minute the man raised up again and continued.

"That humming noise kept growing more and more distinct till it seemed to be right over the town, an' then I saw a sight I'll never forget as long as I live. Right outa the middle of that bunch o' clouds a big blunt-nosed thing began to push through. At first it looked like a sixteen-inch shell magnified a thousand times. But more and more of it kept comin' till I thought I was havin' the D. T.'s. I looked away f'r a second, then back again, and there was the whole thing, hanging silent against the storm clouds,—the most gigantic dirigible I've ever seen in all my life!

"I'd almost take oath that it was more 'n a mile long, and as it lay up there without a sound, without a light, and with occasionally a puff of queer-looking smoke coming from the sides, you c'd actually feel the—menace—of it."

The man stumbled awkwardly over the unaccustomed word, but none of the chilling effect of the story was lost on his listeners. They helped him to another drink.

"Pretty soon the humming noise began again and the big ship just dissolved up into the mist. Then the rain came. First a few heavy drops, then more, until it suddenly seemed as though the whole bottom of the sky had dropped right out. Man and boy, I've been about the world and seen some mighty terrible storms, but nothin' I ever been in c'd equal this. No wind—just the awful, crushing weight of tons of water pouring down.

"I tried to run for the hills, but the water simply beat me flat to the ground every few yards. Buildings along the streets began to sag, and people ran out into the rain only to be thrown down. Pretty soon the run-off from the mountain swirled into the streets and carried off everything before its rush. I managed to crawl out of the town and into the heavy undergrowth back a ways from shore. This sheltered me from the rain so's I could walk upright, anyway, and I finally got away from the worst of it."

Again the stranger sagged back, exhausted by the strain of living over again those terrible hours. Careful administration of a further stimulant brought him round, and he continued.

"By morning the rain had stopped and most of the clouds had been carried away by a little breeze from sea. But there was still trouble ahead, plain enough. You know what stands behind Ancud—the Hornopiren Volcano. Well, that old hole ain't done anything but let off a little steam now an' then for the last hundred years. But yesterday morning she was sure poppin'.

"There was a mushroom of dirty smoke comin' from the peak that went a mile into the air. Even from where I was, hidin' like a scared rat, I guess, I c'd hear her rumbling and roaring every few minutes, and the earthquake shocks made me stagger worse after each one. Like a fool, though, I was set on goin' back to the town and see if anything was left or if I could help any. It was useless. Nothing was left but a few broken-up cement buildings; everything that had been made of wood had been washed out.

"A few bodies I found, but not a sign of any living thing. Then I went to the remains of the bank building."

The fellow quirked his lips into a thin smile. "Someone had beat me to it! The vaults had been blown open and everything taken. That pretty near laid me out. I looked for tracks, and they were plain enough to see in the new mud. I followed them—a party of six or seven as far as I could make out. They had gone to every store left standing and had robbed them thoroughly. In one place I found a man who had evidently escaped the flood. He was shot between the eyes.

"Any sap would 'a' known by then that the storm 'an' everything was a put-up job. I don't pretend to savvy how such a thing could be done—them powers are way above my head—but I figured you fellows might. But I also wanted to see who it was done it, so I followed those tracks right out of town till I came to where they stopped. And all around was a space where the grass and brush had been crushed down. A hundred yards away there was another of those patches. Havin' seen what I'd seen, I know'd it was the basket-like things on the bottom of that dirigible that had made 'em.

"Then the volcano broke loose for fair, and I ran for my life. I didn't get quite all clear—" he held up the sole of his right foot and showed it to be horribly seared and torn, "—but I made it at last and set off to tell you fellows what's investigatin' this matter all about it." His voice died away and Thornton eased him back on a blanket.

CHAPTER III

Chaos

THORNTON led his friend off into the darkness.

"What do you think of it all, Jack?"

The reporter smirked. "Looks like the old hunch was pretty good, eh?" He fell silent for a long moment, envisioning to himself the sudden rush and swirl of the waters, the buildings tottering, crumbling, and swallowed up in the flood, the dying screams of those trapped. . . .

"God, Larry, they're devils. . . And it's up to us to stop them."

Thornton nodded slowly. "I was going to suggest that we leave at once, but that poor fellow deserves a respite, and I think it will be some time before we get another rest ourselves."

"Correct. By the way, could you clear up one small point for me?"

"Probably." Thornton grinned in the darkness. "What is it?"

"What was the method used to precipitate the storm so suddenly and completely,—because there's no doubt now, of course, that it was artificially induced."

"Well, you remember our new friend's reference to 'queer-looking smoke' coming from the sides of the monster. You will also remember that quite a number of years ago experiments were made in the direction of producing rainfall by spraying the clouds with electrified sand. You begin to see light, eh? In all likelihood the gentleman with whom we are dealing has so developed this line of research that he is now able to use a very small grain of sand, perhaps even a dust mote, that will carry a very high charge of electricity.

"It may even be that he can scatter his dust throughout the cloud mass and then apply his charge suddenly, sending down the rainfall all at once. I don't pretend to know anything about it at all; this is merely theory.

But it's the only theory that will fit all of this particular group of facts, and I have no doubt that it will prove to be sound.

"What puzzles me now, aside from the boiled fish, is the fact that it would take an incredibly brilliant man to do all this, a master of meteorology, and I can think of no one who. . . Well, what's biting you?"

Darrell had jumped as though stung from behind. "Meteorology! By God, Larry, I've got it! I've got it!"

"Well, scratch it if it itches."

"No, no, I mean I know what it is. . . it's Dr. Borgman. . . did I ever tell you about the time I went to the Rockies looking for him? . . . of course I did. Well, that's who it is, all right. Lord, what a sap I am not to have guessed sooner; I knew he was in South America, and I might have known that it was a dirigible he's been building back home." He stopped for breath and Thornton's cool voice broke in.

"That helps some, but our real trouble is going to be in finding him. We've got to anticipate his next job. Which reminds me, why should he practice his trade so far south—on these dinky villages?"

"Oh, that's easy. It isn't generally known, but most of these small coastal towns are unbelievably rich. Mineral deposits all along here, and there's a good deal of development, too. There's plenty of pickings to attract the buzzards."

"I see. Well, where do you think his next job will be? You seem to know the coast pretty well."

"Yeah. I don't think he'll dare try any place as large as Santiago or Concepcion—yet—so the next best is a tiny nitrate port called Port Llico. There's a volcanic peak not far from there, too, I believe, named El Descabezado. That's the easiest spot for Borgman to strike at within several hundred miles."

"All right. Let's get some sleep and be on our way early tomorrow morning."

Together they arranged the stranger before the fire in three of their blankets. But the care they took proved useless in the end, for he died during the night, without a sound. The weakened condition of his body and the natural reaction from the over-use of stimulants while telling his story brought on the inevitable. They buried him back a way from the beach before sunrise the next morning while Thornton said a brief prayer. Then they hurriedly packed their duffle into the boat and headed north for Port Llico. Both men were as eager as hounds on leash; they scented action and begrudged every minute of delay.

At Concepcion, a city of some size, Thornton and Darrell stopped for a day to lay plans and to get some necessary information. Two hours spent with the military governor and the city officials succeeded in getting things moving. It was learned that there was already a small detachment of troops waiting at Port Llico to guard and assist the loading of and payment for a large and valuable shipment of nitrate products. It was also learned that the great dirigible had actually been seen, pointing to the north, in the interior. It was further learned that the two men would be able to have the use of a seaplane and pilot if they so desired. All this was accomplished in comparative secrecy, and no hint of the nearness of the terrible danger that was rising the South American coast from its very foundations was allowed to escape.

DARRELL seized the opportunity to dispatch a long report to his paper in New York, intended to reassure the people of the country, if any reassurance were necessary. Unfortunately, however, the paper seized the chance for a great scoop and played the story up. The morning after Jack telegraphed his copy in, the *Globe* was on the streets with six-inch screaming headlines:

SOUTH AMERICAN CONTINENT DESTROYED!

Madman Invokes Volcanoes to Raze Western Coast—Thousands Die.

According to an exclusive report by our special correspondent in South America, the Chilean coast is being systematically shattered by some mad genius who, having apparently solved the secret of volcanic activity, controls and hurls these fiery horrors at will upon the heads of the unsuspecting and defenseless native populations. The forces of utter annihilation and obliteration are at work in Chile. . . etc., etc.

Live news being scarce at that time, all the other papers played the disasters up full. Each new edition saw the death toll mounting higher and higher. The news spread like wildfire over America, then to England and the continent. The peoples of the world awaited the next act of the drama of death with an uneasy apprehension. Governments debated hesitantly the advisability of interfering but withdrew in face of the possible complications. All this came as a result of a report which was little more than a rumor, unsubstantiated, concerning a state far removed from the normal interests of most men and women.

At this delicate moment, due probably to some sort of sympathetic influence from the unusual volcanic activity going on in South America, no less than five semi-active volcanic peaks erupted in different parts of the world—Kilauea in the Hawaiian Islands, Mt. Vesuvius in Italy, Lassen Peak in California, the Katmai Volcano in southern Alaska, and Mt. Pelee in the West Indies.

Because most people had been more or less fearful and even expectant of such an occurrence, loss of life was not particularly heavy. There were a number of lives lost, however, and property destruction was appalling, and exaggerated reports filled the columns of the press to the exclusion of all else.

The effect upon the population was astounding: in all mountainous regions, and even in sections which boasted only a few low-lying hills, people abandoned their mines, farms, homes in which they had spent their lives, even their very children in some instances, and stampeded for the lowlands. Incredible tales of cruelty and fear were on every tongue. Disease and hunger entered the cities in the wake of the fugitives. Stark panic had the world by the throat.

Back in Concepcion, totally unaware of the sensation they had created at home, Thornton and Darrell with their pilot took off for Port Llico in an ancient plane with governmental orders for the port authorities and a grim determination to put a stop to the carnage that had already nearly decimated the coast population and bade fair to continue until the destruction was complete.

They traveled up the coast for two hours before sighting the tiny landing-field which distinguished Port Llico from most other Chilean coastal towns; then, after swooping low to drop off a packet of official-looking documents, they turned abruptly inland toward the mountains. Within five minutes, by the aid of powerful

field glasses, Thornton located the massive dirigible and, nearby, Dr. Borgman's camp. Signs of furious activity were evident, and the geologist signaled to the pilot to cut off the motor and fly over. Only the rushing of the wind could be heard as the two friends peered eagerly over the side of the ship at the scene below.

A tall structure, something like a number of trestles, and which appeared to be practically completed already, occupied a miniature plateau on the side of the mountain El Descabezado itself. It stood in the shape of a semi-circle and apparently from tip to tip, covered almost a quarter of a mile. Fastened at various points all over the superstructure were myriad steel reflectors, slightly concave, and all aimed at the same point. This point was occupied by what looked like a large black box with some sort of glorified shutter on the front much as a camera has. From their great height in the airplane, the whole affair looked to the three men like the skeleton of one half of an enormous funnel.

By this time the plane was losing altitude rapidly, so Thornton signaled to the pilot to use the motor again and circle over the sea for a while.

Darrell twisted around in his seat and shouted above the roar of the engine. "What the hell's it all about?"

Thornton smiled thinly. He held up the end of the speaking tube and motioned to the reporter to put on the head-phones.

"It's all pretty plain now, Jack. That devilish contraption we just passed over enables Borgman to gather together the rays of the sun and increase their power a thousandfold by concentration. With that shutter-like business he can spread them fanwise over a given stretch of the sea and 'turn on the power,' so to speak, at any moment. And that, my dear friend, is why so many hundreds of fish were killed instantly by the sudden application of such terrible heat, a heat which doubtless penetrated quite a distance into the water before its force was nullified. With such a power at his command, the Doctor easily evaporates tremendous quantities of water, which form the 'storm' with which we are familiar. The use of electrified dust, and the subsequent volcanic eruption, need no further explanation."

Darrell spoke. "Several years ago there was an invention something like that, only smaller, in which the inventor has a series of mirrors focused to a point and was able to melt a brick in a few seconds. . ."

"Of course . . . yes, I recall it. Borgman has developed his—brainchild—from that basis."

DARRELL broke in again. "How on earth does he manage to handle such a huge weight of metal?"

"It's not such a huge weight as it looks. Probably a beryllium compound of some sort. I have no doubt that the whole thing is extraordinarily light."

Again Darrell looked up from his notebook in which he was trying to scrawl some notes. "Do you mean to tell me that it's simply the increase in heat that takes up such masses of water as we know are taken up? That sounds a bit thin to me, especially when you consider that Borgman's camp is miles from the ocean itself."

Thornton fell silent, and only the monotonous beat of the engine was heard for some minutes. Then he cleared his throat.

"Well, it has long been accepted that the physics of evaporation, briefly, is this: the molecules of water, which are constantly in motion, naturally leap out of the water and return, and many are carried away by the air moving across the surface. Heat stirs the molecules into increased activity and as a result more of them are removed as they leap out of the water. After what we have observed these last few days, however, I am not inclined to accept much of anything any more. It's not utterly impossible that there may be a hitherto unidentified ray, emanating from the sun, which has much to do with evaporation. It is just possible that Borgman has discovered such a ray and, in that black box-like affair of his, segregates and intensifies it before turning it upon the sea. This sounds fantastic, I know, but it affords an explanation for the presence of the otherwise unexplainable box, and it also satisfactorily explains a phenomenon that, in your own words, seems a 'little thin' when considered in terms of everyday scientific knowledge. . ."

"It fits the facts, all right. I suppose Borgman studied the upper air currents pretty carefully before each job to insure his 'storm' going to the right place."

"Oh, yes. A meteorologist of his abilities would have little trouble there."

The pilot turned around to the two friends and by gestures indicated that the gasoline was beginning to run low. Thornton pointed to his parachute, then to the mountains just behind El Descabezado. The pilot's eyes widened and he shook his head. There followed a fierce argument in dumb show, after which the pilot reluctantly turned back toward the land. Thornton turned to his friend again.

"Is there anything else you'd like to know before we drop in on our friends?" He smiled a bit grimly.

Darrell laughed aloud, eyes gleaming. "Just to keep the conversation going," he said, "you might tell me whether or not there's quite an element of luck in Borgman's having started off a volcano every time he struck."

"Well, perhaps. But he minimized the chances of failure by choosing a volcanic region and he probably knows as well as you or I how little it really takes to disturb the delicate balance of hell fire and brimstone below. Of course, in time he would be bound to work at some place where the sum total of the forces beneath the earth's surface happened not to be so correlated as to produce an eruption even when the good Doctor played havoc with the pressure in his inimitable manner. Or the eruption might happen at a spot other than he had selected. But of course we don't intend that Borgman keep playing this game till nature defeats him; it is up to us to stop him, and soon."

Darrell opened his mouth to reply when the engine suddenly coughed and began to wheeze. The pilot quickly fumbled with something in his cockpit, and the motor began to throb regularly again. The pilot's face was drawn when he turned around. Momentarily switching off the ignition, he shouted above the rush of the plane, "We're running on the reserve tank now, and it won't last long. If we don't get out of the mountains before that gas is gone. . ."

The scientist nodded quickly and pointed to a rather barren peak to the left of and slightly behind El Descabezado. The sun was a huge red globe slithering through a low-lying cloud bank on the western horizon

as the plane flew slowly over the chosen spot. Thornton clambered over the edge of the cockpit and leaped off into space. Darrell, chewing vigorously, followed. Two white splashes glimmered in the gathering dusk of the canyon as the two men floated to earth. The pilot, after circling till the men were lost to sight, turned his plane round and headed for Port Llico.

Jack Darrell struck the sloping side of the canyon wall with a crash and was dragged roughly through brush and over rocks for several feet before coming to a halt. Disentangling himself from his parachute, he scrambled to his feet and listened. A few night birds called; he could hear the rushing of the stream in the canyon below; occasional strange rustlings in the tall grass startled him. He shouted loudly for his friend, but no one answered. He clambered along the slope for some distance calling Thornton's name at intervals, but in vain. The utter blackness of night descended upon him, and he shivered. Darrell groped his way back to his abandoned parachute, carried it down to the stream, and rolled up for the night. And in spite of the weirdness of his surroundings, he slumbered heavily till dawn.

CHAPTER IV

The Struggle on the Crater

AFTER a brief plunge in the creek the next morning, Darrell turned his steps upstream in his efforts to find his friend. For three miles he battered his way up through weeds and bushes, but he found not a trace of Thornton, nor were there any replies to his shouts. The rays of the sun began to filter into the canyon, and Darrell realized that he must abandon the search and turn his attention to fighting Dr. Borgman. The hundreds of people had more right to his efforts than one man who might already be beyond aid. . . The reporter resolutely turned his mind to the task ahead.

Slowly and painfully he climbed from the steep walls of the canyon up to the long and rugged slope of El Descabezado. He was on the side opposite to that on which Borgman's camp was located, so he had no fear of discovery. The climb was not dangerous, but it was long and tiring. A good deal of shale and loose rubble covered the mountainside, causing Darrell to slip frequently.

As the morning passed, he stumbled more often, and his legs began to wobble badly. Sweat dripped constantly into his eyes. His head whirled. In spite of this, however, he kept plodding upward and about noon was rewarded by sight of his goal. With a last effort he ran the final hundred yards to the brow of the mountain and, heart pounding and spots dancing before his eyes, he burst over the rim to gaze upon a sight more utterly astounding than anything he had ever before witnessed in all his life. His breath went out of him in a sob and he slumped to the ground.

Perhaps four or five miles away Port Llico nestled in a tiny cove, and little specks could be seen running frantically to and fro. Some hundreds of yards out from shore the whole sea was literally seething; huge clouds of steam were rising from the surface, and already clouds, heavy and gray, were forming and drifting slowly in over the town. Between Darrell and the Borgman camp there stood the crater of the volcano, and the re-

porter could see nothing of what was happening there, but his vivid imagination pictured it all clearly enough.

A moving figure suddenly caught Darrell's eye; a man was slowly moving up the lower slope of the mountain, evidently just having left a little ribbon of road that wound up a few thousand feet and then vanished. Could it be Thornton? The reporter strained his eyes eagerly. No, the figure wore a uniform. Then another figure, and another, and still others came into view. The port guard was coming to the attack! Darrell thrilled as he watched them climb laboriously up in a fan-shaped formation. From a vantage point on a rock somewhat behind the skirmish line an officer directed the advance.

The lone spectator felt a desire to see the other actors in this drama, so he cautiously wormed his way to the very top of the crater-edge and looked across. There was the mighty dirigible; there was the strange contrivance of steel that wrought such terrible havoc; and there, a tiny figure in white with a heavily bearded face, stood Dr. Borgman, apparently calm and unworried. Darrell felt a sudden apprehension as he understood Borgman's confident attitude.

His eyes turned to the shutter and the black box. A small ladder leaned against the side, and a man sat at the top manipulating two small wheels that had been unnoticeable from the airplane. At a sign from the leader, this man whirled one of the discs, then leaned carefully over and peered into the open face of the shutter. Instantly Darrell grasped the meaning of this. He groaned softly. They were regulating the rays as they passed through the shutter so as to produce a single thin stream of terribly concentrated heat. Darrell writhed in his helplessness.

A sudden tremor of the ground attracted his attention for the moment. A rumbling noise came from the depths of the volcano and tiny wisps of vapor rose upwards. Already El Descabezado was beginning to "feel her oats," thought Darrell. When he turned back to the scene before him, the focusing apparatus was being swung downward to bear on the soldiers toiling up the hill.

Borgman struck. The dazzling beam of light played over a uniform, there was a burst of smoke and flame, and the man fell backward, a twisted, crumbling ash. With a horrible fascination the lone watcher saw the terrible ray crawl over the slope, burning up brush, melting stones, and destroying those gallant men in a puff of smoke.

The officer frantically called for a retreat and took refuge behind his boulder. No one obeyed. While they were still almost half a mile from the top, the soldiers began firing raggedly and dashed courageously up the slope toward the camp. Before they had progressed fifty yards all that remained to mark their passing were a number of scattered heaps of charred bones and half burnt flesh. Darrell sickened suddenly and turned away.

Many long minutes passed before he began to recover from his nausea. Eventually he sat up and became conscious of another earthquake shock, slightly more noticeable than the former one. Darrell rose and looked out at the sea. Already it was boiling furiously again, and the heavy clouds had accumulated so that they began to interfere with the heat rays from the trestle on the

mountain. The reporter sat down again to wait for darkness. Borgman and his crew would have to use the dirigible at night to project the electrified dust throughout the cloud-mass. The camp would be deserted; perhaps he could strike tonight. He drew out his heavy automatic and examined it carefully, almost lovingly. Several times during the long, dragging afternoon his eyes scanned the neighboring mountain slopes for some sign of Thornton, but could find none. Perhaps his friend was badly hurt or even already dead in some obscure hole in those endless mountains. Darrell swallowed heavily.

NIGHT came at last, with damp cloud streamers crawling slowly over the slope and filling the canyon below. The rumbling of the volcano, which had increased perceptibly throughout the afternoon, now merged with a series of sharp earthquakes at irregular intervals. Smoke and gas issued from the crater in a steady stream.

Above the muffled booming in the pit Darrell heard the hum of motors. He crawled cautiously to the lip of the huge cavity and looked across. The dirigible was just taking off, rising smoothly and quietly from its resting place on the plateau; in a moment it was lost to view in the clouds. The reporter quivered as he sprang to his feet and began the half-mile walk around the crater to reach the camp on the other side. Curious, he climbed over the rough border of the crater itself and looked in.

Far down in the depths the molten magma was bubbling and heaving redly. Darrell was conscious of terrific heat, and the roar of the volcano emphasized the prolonged trembling of the ground beneath his feet. He drew back hastily and continued his walk toward the camp, now invisible in the darkness. As he drew nearer, he again chose to walk along the rocky border of the pit where the dimly reflected light from below enabled him to see.

Darrell realized with a sense of shock that there was another man ahead of him, squatting on the brink of the crater, looking over. The reporter crouched behind a rock spur to watch. The other figure was dressed in white and wore a beard. . . . Darrell felt only a mild surprise when he recognized Dr. Borgman before him. The crew had gone without its leader to continue its work of destruction; Borgman was awaiting their return—alone. Darrell smiled grimly as his hand gripped tightly around the butt of his gun. He crept closer.

Dr. Borgman leaned further out over the pit and peered at the fury below. He began to smile and wave his arms slowly around. He nodded and muttered to himself, but the sounds were drowned out by the ever-increasing thunder of the volcano. Noises like gigantic bubbles bursting and slopping the walls with fiery liquid filled Darrell's ears to the exclusion of all else, but his eyes were riveted on Borgman's strange actions. The latter chuckled again and again, showing his teeth, and as the flames cast a hideous reddish glare over the leering face it seemed as though man, devil, and volcano were all of a piece. Gradually it was born in upon the watching man that Borgman was mad,—utterly insane, and actually believed himself to be master of the volcano.

For the second time that day Darrell felt sick, and he turned away.

A sudden violent earthquake shock threw him against the stone behind which he was hiding, and he became immediately aware of his own peril. He stood up. . . . There were two figures now, and the second was that of Larry Thornton! With a shout of relief the reporter started toward his friend, then halted with foot in mid-air. The roar of the volcano deafened him to all other sounds, but the scene before his eyes was all too understandable even in pantomime. Thornton's lips moved and Borgman whirled about, drooling, glaring savagely at the scientist who stood quietly with revolver in hand. With the speed of a striking snake the man in white lunged forward and seized the gun.

Thornton fired once, but it had no effect, and in a moment the two men were locked in a terrible grip, wrestling mightily on the lip of the crater. With the strength of an insane fury Borgman soon rushed Thornton back toward the pit, and the latter began battering with both hands at his opponent's face. In a moment it was turned to red ruin, and Borgman, blinded by his own blood, heaved Thornton off his feet and flung him away. He fell less than a foot from the edge and lay stunned. Borgman, dashing his hands at his eyes, stepped forward to finish the fight. Another violent tremor shook the ground, causing him to stumble and lurch forward. As he staggered momentarily, Darrell raised his gun and fired. Borgman jerked upright, plucked feebly at his back, sagged, and pitched head-first over the cliff into the maw of the volcano.

Thornton was on his feet before Darrell reached him.

"Let's get the hell outa here!" shouted the reporter.

Thornton grinned. "Very appropriate," he bellowed, as they both turned and ran down hill as fast as they dared in the darkness. The roar of the volcano had now become almost intolerable, and shock after shock so shook the ground they ran on that they stumbled and fell several times. The glimmer of tall, thin metal poles loomed up ahead and flashed past as the two men careened on.

"Is there anyone else in the camp?" cried Darrell.

"There were two other men," came the answer, "but not now."

Darrell went sprawling but bobbed up again in a moment. "Can you find your way down from here in the dark? It looks to me like this old smoke-hole is going to pop off ahead of schedule."

Thornton was gasping and began to lag a little. The camp tents appeared out of the darkness ahead. "Yes. . . . It's going to erupt . . . tonight, I'm sure. They won't have time to loot the town . . . though they've probably wrecked it . . . with the storm by now." They stopped for breath beside one of the tents. Several yards away Darrell made out a dim shape lying stretched out on the ground. Thornton continued. "Borgman didn't count on such a quick reaction from . . ."

The faint but unmistakable hum of motors could be heard above the reverberation of the volcano. The two men stared at each other.

"We've got to get away from here, quick," Thornton moved off as he spoke, but Darrell caught his arm.

"Look!" His choked voice lost in the roaring, but

(Concluded on page 897)

The World of the Red Sun

BY CLIFFORD D. SIMAK



(Illustration by Paul)

The revolvers of the time-travelers came up almost simultaneously, the sights lined on the brain. The guns roared rapidly, spitting fire.



EADY, Bill?" asked Harl Swanson.

Bill Kressman nodded.

"Then kiss 1935 good-bye!" cried the giant Swede, and swung over the lever.

The machine quivered violently, then hung motionless in pitch blackness. In the snap of a finger the bright sunlight was blotted out and a total darkness, a darkness painted with the devil's brush, rushed in upon the two men.

Electric lights glowed above the instrument boards, but their illumination was feeble against the utter blackness which crowded in upon the quartz windows of the machine.

The sudden change astounded Bill. He had been prepared for something, for some sort of change, but nothing like this. He half started out of his seat, then settled back.

Harl observed him and grinned.

"Scared," he jested.

"Hell, no," said Bill.

"You're traveling in time, my lad," said Harl. "You aren't in space any more. You are in a time stream. Space is curved about you. Can't travel in time when you're still in space, for space binds time to a measured pace, only so fast, no faster. Curve space about you, though, and you can travel in time. And when you're out of space there's absolutely no light, therefore, utter darkness. Likewise no gravity, nor any of the universal phenomena."

Bill nodded. They had worked it all out before, many, many times. Double-wall construction of a strength to withstand the vacuum into which the flier would be plunged at the move of the lever which would snatch it out of space into the time stream. An insulation to guard against the absolute zero that would rule where there could be no heat. Gravity grids at their feet so that they would still be able to orient themselves when flung into that space where there was no gravity. An elaborate heating system to keep the motors warm, to prevent the freezing of gasoline, oil and water. Powerful atmosphere generators to supply air to the passengers and the motors.

It had represented years of work, ten years of it, and a wealth that mounted into seven figures. Time after time they had blundered, again and again they had failed. The discoveries they had made would

have rocked the world, would have revolutionized industry, but they had breathed no word of it. They had thought of only one thing, time travel.

To travel into the future, to delve into the past, to conquer time, to this the two young scientists had dedicated all their labors, and at last success lay beneath their hands.

It was in 1933 they had at last achieved their goal.

The intervening months were spent in experiments and the building of the combination flier-time machine.

Miniature fliers were launched, with the miniature time machines set automatically. They had buzzed about the laboratory, to suddenly disappear. Perhaps at this very instant they were whirling madly through unguessed ages.

They managed to construct a small time machine, set to travel a month into the future. In a month's time, almost to the second, it had materialized on the laboratory floor where it had dropped at the end of its flight through time. That settled it! The feasibility of time travel was proved beyond all doubt.

Now Harl Swanson and Bill Kressman were out in the time stream. There had been a gasp of amazement from the crowd, on the street, which had seen the giant tri-motored plane suddenly disappear into thin air.

Harl crouched over the instrument board. His straining ears could distinguish the wheezy mutterings of the three motors as, despite the elaborate precautions taken to safeguard them, the inexorable fingers of absolute zero clutched at their throbbing metal.

This was a dangerous way, but the only safe way. Had they remained on the surface to plunge into the time stream they might have halted to find themselves and their machine buried by shifting earth; they might have

found a great building over them, they might have found a canal covering them. Here in the air they were safe from all that might occur beneath them in the passing centuries through which they sped at an almost unbelievable pace. They were being fairly hurled through time.

Furthermore, the great machine would serve as a means of travel in that future day when they would roll out of the time stream back into space again.



CLIFFORD D. SIMAK

DESPITE our many failings, we of the twentieth century have still many virtues that spell the possibility for further progress in our civilization. Our race is still young enough, strong enough, and faced with difficulties enough to keep us alert in mind and body. We are a versatile race, we are quick to meet new situations; we have not yet been spoiled by luxury nor enslaved by superstition.

But races are like individuals—they grow, mature, decay, and die. And it is quite possible that as our civilization progresses, as poverty, war, and disease are wiped out, and we have lost the habit of fighting against difficulties, that decay will set in. We will become an old and senile race; intolerant of new things, given to superstition, weary of life and almost indifferent. If that is true the final end of all humanity will follow—for nature is cruel and callous and only awaits the hour of our weakness to overthrow us.

Mr. Simak has given us here an absorbing picture of the world of the future and what may happen when the fresh young world of the 20th century meets the decaying humanity of many millenniums in the future.

Perhaps it might serve as a means of escape, for there was no fore-knowledge to tell them what they might expect a few thousand years in the future.

The motors wheezed more and more. They were operating on a closed throttle. At full speed they might dash the propellers to bits.

However, they must be warmed up. Otherwise they would simply die. It would be stark tragedy to roll out into space with three dead engines. It would mean a crash which neither of them could hope to survive.

"Give her the gun, Bill," said Harl in a tense voice.

Bill pushed the accelerator slowly. The motors protested, sputtered, and then burst into a roar. Here, in the machine, because of the artificial air, sound could be heard. Out in the time stream there could be no sound.

Harl listened anxiously, hoping fiercely that the propellers would stand.

Bill cut the acceleration and the motors, once more barely turning over, ran more smoothly.

Harl glanced at his wrist watch. Despite the fact they were in time, where actual time could not be measured by clocks, the little watch still ticked off the time-space seconds and minutes.

They had been out eight minutes. Seven minutes more and they must roll out of time into space.

Fifteen minutes was all that the tortured motors could stand of this intense cold and vacuum.

HE GLANCED at the time dial. It read 2816. They had traveled 2816 years into the future. They should be well over 5000 when the fifteen minutes were at an end.

Bill touched his arm.

"You're sure we're still over Denver?"

Harl chuckled.

"If we aren't, we may find ourselves billions of miles out in space. It's a chance we have to take. According to all our experiments we should be in exactly the same position we were when we snapped into the time stream. We are occupying a hole in space. It should remain the same."

Their lungs began to ache. Either the atmosphere generators were failing or the air leakage out into the vacuum was greater than they had expected. Undeniably the air was becoming thinner. The motors still ran steadily, however. It must be a leakage from the cabin of the ship.

"How long?" bellowed Bill.

Harl glanced at his watch.

"Twelve minutes," he reported.

The time dial read 4224.

"Three minutes," replied Bill, "I guess we can stand it. The motors are running all right. It's getting colder, though, and the air's pretty thin."

"Leakage," said Harl gruffly.

The minutes dragged.

Bill tried to think. Here they hung, hypothetically, over the city of Denver. Less than a quarter of an hour ago, they were in the year 1935, now they were passing over years at a lightning-like speed—a speed of over 350 years in each space-minute. They must now be in about the year 6450.

He glanced at his hands. They were blue. It was

intensely cold in the cabin. Their heat was leaking—leaking swiftly. It was hard to breath. The air was rare—too rare for safety. Suppose they became unconscious. Then they would freeze—would drive endlessly through time. Frozen corpses, riding through the æons. The earth beneath them would dissolve in space. New worlds might form, new galaxies be born as they whirled on in the time stream. The time needle would reach the pin, bend back upon itself and slip past the pin, to slam against the side of the dial, where it would still struggle to record the flight of the years.

He chafed his hands and glanced at the time dial. It read 5516.

"A quarter of a minute," snapped Harl, his teeth chattering, his right hand on the lever, his wrist watch held in front of him.

Bill placed his hands on the wheel.

"All right!" shouted Harl.

He jerked the lever.

They hung in the sky.

Harl uttered a cry of astonishment.

It was twilight. Beneath them were the ruins of a vast city. To the east lapped a sea, stretching to a murky horizon. The sea coast was a desert of heaped sand.

The motors, warming to their task, bellowed a mighty challenge.

"Where are we?" cried Harl.

Bill shook his head.

"It's not Denver," said Harl.

"Doesn't look much like it," agreed Bill, his teeth still chattering.

He circled, warming the motors.

There was no sign of humanity below them.

The motors blasted a throaty defiance to the desert sands and under Bill's hand, the machine came down in a long swoop, headed for a level stretch of sand near one of the largest of the white stone ruins.

It hit the ground, bounced high in a cloud of sand, struck and bounced again, then rolled to a stop.

Bill cut the motors.

"We're here," he said.

Harl stretched his legs wearily.

Bill glanced at the time dial. It read 5626.

"This is the year 7561," he said slowly, thoughtfully.

"Got your gun?" asked Harl.

Bill's hand went to his side, felt the reassuring touch of the .45 in its holster.

"I have it," he said.

"All right, let's get out."

Harl opened the door and they stepped out. The sand glittered under their boots.

Harl turned the key in the door lock and locked the ring to his belt.

"Wouldn't do to lose the keys," he said.

A chill wind was blowing over the desert, moaning among the ruins, carrying with it a freight of fine, hard granules. Even in their heavy clothing, the time explorers shivered.

Harl grasped Bill by the arm, pointing to the east.

There hung a huge dull red ball.

Bill's jaw fell.

"The sun," he said.

"Yes, the sun," said Harl.

They stared at one another in the half-light.

"Then this isn't the year 7561," stammered Bill.

"No, more likely the year 750,000, perhaps even more than that."

"The time dial was wrong then."

"It was wrong. Badly wrong. We were traveling through time a thousand times faster than we thought."

THEY were silent, studying the landscape about them. They saw only ruins which towered hundreds of feet above the sands. They were ruins of noble proportions, many of them still bearing the hint of a marvelous architecture of which the twentieth century would have been incapable. The stone was pure white, gleaming beautifully in the twilight which the feeble rays of the great brick red sun could not expel.

"The time dial," said Bill, thoughtfully, "was registering thousands of years instead of years."

Harl nodded cheerlessly.

"Maybe," he said. "For all we know it may have been registering tens of thousands of years."

A creature, somewhat like a dog, dull gray in color, with tail hanging low, was silhouetted for a moment on a sand dune and then disappeared.

"These are the ruins of Denver," said Harl. "That sea we saw must cover the whole of eastern North America. Probably only the Rocky Mountains remain unsubmerged and they are a desert. Yes, we must have covered at least 750,000 years, perhaps seven million."

"What about the human race? Do you think there are any people left?" asked Bill.

"Possibly. Man is a hardy animal. It takes a lot to kill him and he could adapt himself to almost any kind of environment. This change, you must remember, came slowly."

Bill turned about and his cry rang in Harl's ear. Harl whirled.

Running toward them, leaping over the sands, came a motley horde of men. They were dressed in furs and they carried no weapons, but they charged down upon the two as if to attack.

Harl yanked his .45 from its holster. His great hand closed around the weapon and his finger found the trigger. It gave him a sense of power, this burly six-shooter.

The men, their furs flying behind them, were only a hundred yards away. Now they yelled, blood-curdling, vicious whoops which left no doubt that they were enemies.

No weapons. Harl grinned. They'd give 'em hell and plenty of it. There were about fifty in the mob. Big odds, but not too great.

"We might as well let them have it," he said to Bill. The two guns roared. There was disorder in the running ranks, but the mob still forged ahead, leaving two of its members prone on the ground. Again the .45's barked, spurring a stream of fire.

Men staggered, screaming, to collapse. The rest hurled them, raced on. It seemed nothing could stop them. They were less than fifty feet away.

The guns were empty. Swiftly the two plucked cartridges from their belts and reloaded.

Before they could fire the mob was on top of them. Bill thrust his gun into the face of a running foeman and fired. He had to sidestep quickly to prevent the fellow tumbling on top of him. A knotted fist connected with his head and he slipped to his knees. From that position he drilled two more of the milling enemies before they piled on top of him.

Through the turmoil he heard the roar of Harl's gun.

He felt the grip of many hands, felt bodies pressing close about him. He fought blindly and desperately.

He fought with hands, with feet, with suddenly bared teeth. He felt bodies wilt under his blows, felt blood upon his hands. The sand, kicked up by many feet, got into his nostrils and eyes, half strangling, half blinding him.

Only a few feet away Harl fought, fought in the same manner as his companion. With their weapons knocked from their hands they resorted to the tactics of their ancient forebears.

It seemed minutes that they battled with their attackers, but it could not have been more than seconds before the sheer weight of numbers subdued them, wound thongs tightly about their hands and feet and left them, trussed like two fowls ready for the grid.

"Hurt, Bill?" called Harl.

"No," replied Bill. "Just mussed up a bit."

"Me, too," said Harl.

They lay on their backs and stared up at the sky. Their captors moved away and massed about the plane.

A loud banging came to the ears of the two. Evidently the others were trying to force an entrance into the machine.

"Let them bang," said Harl. "They can't break anything."

"Except a propeller," replied Bill.

After more banging, the men returned and untying the bonds on the feet of the captives, hoisted them up.

For the first time they had an opportunity to study their captors. They were tall men, well proportioned, clean of limb, with the stamp of well-being about them. Aside from their figures, however, they held a distinctly barbarous appearance. Their hair was roughly trimmed, as were their beards. They walked with a slouch and their feet shuffled in the sand with the gait of one who holds a purposeless existence. They were dressed in well-tanned furs, none too clean. They bore no arms and their eyes were the eyes of furtive beings, shifty, restless, as are the eyes of hunted beasts, always on the lookout for danger.

"March," said one of them, a large fellow with a protruding front tooth. The single word was English, with the pronunciation slightly different than it would have been in the twentieth century, but good, pure English.

They marched, flanked on either side by their captors. The march led back over the same route as the future-men had come. They passed the dead, but no attention was paid them, their comrades passing the sprawled figures with merely a glance. Life apparently was cheap in this place.

CHAPTER II

Orders of Golan-Kirt

THEY passed between monstrous ruins. The men talked among themselves, but, although the tongue was English, it was so intermixed with unfamiliar words and spoken with such an accent that the two could understand very little of it.

They reached what appeared to be a street. It led between rows of ruins and now other humans appeared, among them women and children. All stared at the captives and jabbered excitedly.

"Where are you taking us?" Bill asked a man who walked by his side.

The man ran his fingers through his beard and spat in the sand.

"To the arena," he said slowly that the twentieth century man might understand the words.

"What for?" Bill also spoke slowly and concisely. "The games," said the man, shortly, as if displeased at being questioned.

"What are the games?" asked Harl.

"You'll find out soon enough. They are held at high sun today," growled the other. The reply brought a burst of brutal laughter from the rest.

"They will find out when they face the minions of Golan-Kirt," chortled a voice.

"The minions of Golan-Kirt!" exclaimed Harl.

"Hold your tongue," snarled the man with the protruding tooth, "or we will tear it from your mouth."

The two time-travelers asked no more questions.

They plodded on. Although the sand beneath their feet was packed, it was heavy going and their legs ached. Fortunately the future-men did not hustle their pace, seeming to be content to take their time.

A good sized crowd of children had gathered and accompanied the procession, staring at the twentieth century men, shrieking shrill gibberish at them. A few of them, crowding too close or yelling too loudly, gained the displeasure of the guards and were slapped to one side.

For fifteen minutes they toiled up a sandy slope. Now they gained the top and in a depression below them they saw the arena. It was a great building, open to the air, which had apparently escaped the general destruction visited upon the rest of the city. Here and there repairs had been made, evident by the decidedly inferior type of workmanship.

The building was circular in shape, and about a half-mile in diameter. It was built of a pure white stone, like the rest of the ruined city.

The two twentieth century men gaped at its size.

They had little time, however, to gaze upon the building, for their captors urged them on. They walked slowly down the slope and, directed by the future-men, made their way through one of the great arching gateways and into the arena proper.

On all sides rose tier upon tier of seats, designed to hold thousands of spectators. On the opposite side of the arena was a series of steel cages, set under the seats.

The future-men urged them forward.

"They're going to lock us up, evidently," said Bill.

He of the protruding tooth laughed, as if enjoying a huge joke.

"It will not be for long," he said.

As they approached the cages, they saw that a number of them were occupied. Men clung to the bars, peering out at the group crossing the sandy arena. Others sat listlessly, regarding their approach with little or no interest. Many of them, the twentieth century men noticed, bore the marks of prolonged incarceration.

They halted before one of the cells. One of the future-men stepped to the door of the cage and unlocked it with a large key. As the door grated back on rusty hinges, the others seized the two, unbound their hands and roughly hurled them inside the prison. The door clanged to with a hollow, ringing sound and the key grated in the lock.

They struggled up out of the dirt and refuse which covered the floor of the cell and squatted on their heels to watch the future-men make their way across the arena and through the archway by which they had come.

"I guess we're in for it," said Bill.

Harl produced a pack of cigarettes.

"Light up," he said gruffly.

They lit up. Smoke from tobacco grown in 1935 floated out of their cell over the ruins of the city of Denver, upon which shone a dying sun.

They smoked their cigarettes, crushed them in the sand. Harl rose and began a minute examination of their prison. Bill joined him. They went over it inch by inch, but it was impregnable. Except for the iron gate, it was constructed of heavy masonry. An examination of the iron gate gave no hope. Again they squatted on their heels.

Harl glanced at his wrist watch.

"Six hours since we landed," he said, "and from the appearance of the shadows, it's still morning. The sun was well up in the sky, too, when we arrived."

"The days are longer than those back in 1935," explained Bill. "The earth turns slower. The days here may be twenty-four hours or longer."

"Listen," hissed Harl.

To their ears came the sound of voices. They listened intently. Mingled with the voices was the harsh grating of steel. The voices seemed to come from their right. They grew in volume.

"If we only had our guns," moaned Harl.

The clamor of voices was close and seemed to be almost beside them.

"It's the other prisoners," gasped Bill. "They must be feeding them or something."

His surmise was correct.

BEFORE their cell appeared an old man. He was stooped and a long white beard hung over his skinny chest. His long hair curled majestically over his shoulders. In one hand he carried a jug of about a gallon capacity and a huge loaf of bread.

But it was neither the bread nor the jug which caught the attention of Harl and Bill. In his loin cloth, beside a massive ring of keys, were thrust their two .45's.

He set down the jug and the loaf and fumbled with the keys. Selecting one he unlocked and slid back a panel near the bottom of the great door. Carefully he set the jug and the loaf inside the cell.

The two men inside exchanged a glance. The same thought had occurred to each. When the old man came near the door, it would be a simple matter to grasp him. With the guns there was a chance of blazing a way to the ship.

The older, however, was pulling the weapons from his loin cloth.

Their breath held in wonder, the time-travelers saw him lay them beside the jug and the loaf.

"The command of Golan-Kirt," he muttered in explanation. "He has arrived to witness the games. He commanded that the weapons be returned. They will make the games more interesting."

"More interesting," chuckled Harl, rocking slowly on the balls of his feet.

These future men, who seemed to possess absolutely no weapons, apparently did not appreciate the deadliness of the 45's.

"Golan-Kirt?" questioned Bill, speaking softly.

The old man seemed to see them for the first time.

"Yes," he said. "Know you not of Golan-Kirt? He-Who-Came-Out-of-the-Cosmos?"

"No," said Bill.

"Then truly can I believe what has come to my ears of you?" said the old man.

"What have you heard?"

"That you came out of time," replied the older, "in a great machine."

"That is true," said Harl. "We came out of the twentieth century."

The old man slowly shook his head.

"I know naught of the twentieth century."

"How could you?" asked Harl. "It must have ended close to a million years ago."

The other shook his head again.

"Years?" he asked. "What are years?"

Harl drew in his breath sharply.

"A year," he explained, "is a measurement of time."

"Time cannot be measured," replied the old man dogmatically.

"Back in the twentieth century we measured it," said Harl.

"Any man who thinks he can measure time is a fool," the future-man was uncompromising.

Harl held out his hand, palm down, and pointed to his wrist watch.

"That measures time," he asserted.

The old man scarcely glanced at it.

"That," he said, "is a foolish mechanism and has nothing to do with time."

Bill laid a warning hand on his friend's arm.

"A year," he explained slowly, "is our term for one revolution of the earth about the sun."

"So that is what it means," said the old man. "Why didn't you say so at first? The movement of the earth, however, has no association with time. Time is purely relative."

"We came from a time when the world was much different," said Bill. "Can you give us any idea of the number of revolutions the earth has made since then?"

"How can I?" asked the old man, "when we speak in terms that neither understands? I can only

tell you that since Golan-Kirt came out of the Cosmos the earth has circled the sun over five million times."

Five million times! Five million years! Five million years since some event had happened, an event which may not have occurred for many other millions of years after the twentieth century. At least five million years in the future; there was no telling how much more!

Their instrument had been wrong. How wrong they could not remotely have guessed until this moment!

The twentieth century. It had a remote sound, an unreal significance. In this age, with the sun a brick red ball and the city of Denver a mass of ruins, the twentieth century was a forgotten second in the great march of time, it was as remote as the age when man emerged from the beast.

"Has the sun always been as it is?" asked Harl.

The old man shook his head.

"Our wise ones tell us that one time the sun was so hot it hurt one's eyes. They also tell us it is cooling, that in the future it will give no light or heat at all."

The older shrugged his shoulders.

"Of course, before that happens, all men will be dead."

The old man pulled the little panel shut and locked it. He turned to go.

"Wait," cried Harl.

The old one faced them.

"What do you want?" he asked, mumbling half-angrily in his beard.

"Sit down, friend," said Harl. "We would like to talk further."

THE other hesitated, half wheeling to go, then turned back.

"We came from a time when the sun hurt one's eyes. We have seen Denver as a great and proud city. We have seen this land when the grass grew upon it and rain fell and there were broad plains where the sea now lies," said Harl.

The older sank to the sand in front of their cage. His eyes were lighted with a wild enthusiasm and his two skinny hands clutched the iron bars.

"You have looked upon the world when it was young," he cried. "You have seen green grass and felt rain. It seldom rains here."

"We have seen all you mention," Harl assured him. "But we would ask why we have been treated as foes. We came as friends, hoping to meet friends, but ready for war."

"Aye, ready for war," said the old man in trembling tones, his eyes on the guns. "Those are noble weapons. They tell me you strewed the sands with the dead ere you were taken."

"But why were we not treated as friends?" insisted Harl.

"There are no friends here," cackled the old man. "Not since Golan-Kirt came. All are at one another's throats."

"Who is this Golan-Kirt?"

"Golan-Kirt came out of the Cosmos to rule over

the world," said the old man, as if intoning a chant. "He is neither Man nor Beast. There is no good in him. He hates and hates. He is pure Evil. For after all, there is no friendliness or goodness in the universe. We have no proof that the Cosmos is benevolent. Long ago our ancestors believed in love. This was a fallacy. Evil is greater than good."

"Tell me," asked Bill, moving closer to the bars, "have you ever seen Golan-Kirt?"

"Aye, I have."

"Tell us of him," urged Bill.

"I cannot," there was stark terror in the old man's eyes. "I cannot!"

He huddled closer to the cage and his voice dropped to an uncanny whisper.

"Men out of time, I will tell you something. He is hated, because he teaches hate. We obey him because we must. He holds our minds in the hollow of his hand. He rules by suggestion only. He is not immortal. He fears death—he is afraid—there is fear, if only one with the courage might be found."

The old man's face blanched and a look of horror crept into his eyes. His muscles tensed and his claw-like hands clutched madly at the bars. He slumped against the gate and gasped for breath.

Faintly his whisper came, low and halting.

"Golan-Kirt—your weapons—believe nothing—close your mind to all suggestion—"

He stopped, gasping for breath.

"I have fought—" he continued, haltingly, with an effort. "I have won—. I have told you—. He has—killed me—he will not kill you—now that you—know—"

The old man was on the verge of death. Wide-eyed, the two saw him ward it off, gain a precious second.

"Your weapons—will kill him—he's easy to kill—by one who does not—believe in him—he is a—"

The whisper pinched out and the old man slid slowly to the sands in front of the cage.

The two stared at the crumpled form of humanity.

"Killed by suggestion," gasped Harl.

Bill nodded.

"He was a brave man," he said.

Harl regarded the corpse intently. His eyes lighted on the key ring and kneeling, he reached out and drew the body of the future-man close. His fingers closed on the ring and ripped it from the loin cloth.

"We're going home," he said.

"And on the way out we'll bump off the big shot," added Bill.

He lifted the guns from the floor and clicked fresh cartridges into the chambers. Harl rattled the keys. He tried several before he found the correct one. The lock screeched and the gate swung open protestingly.

With quick steps they passed out of the cell. For a moment they halted in silent tribute before the body of the old man. With helmets doffed the twentieth century men stood beside the shriveled form of a man who was a hero, a man who had flung his hatred in

the face of some terrible entity that taught hate to the people of the world. Scanty as was the information which he had given, it set the two on their guard, gave them an inkling of what to expect.

As they turned about they involuntarily started. Filing into the amphitheater, rapidly filling the seats, were crowds of future-men. A subdued roar, the voice of the assembling people, came to their ears.

The populace was assembling for the games.

"This may complicate matters," said Bill.

"I don't think so," replied Harl. "It's Golan-Kirt we must deal with. We would have had to in any case. These men do not count. As I understand it he exercises an absolute control over them. The removal of that control may change the habits and psychology of the future-men."

"The only thing we can do is fight Golan-Kirt and then act accordingly," said Bill.

"The man who captured us spoke of his minions," Harl said thoughtfully.

"He may be able to produce hallucinations," Bill hazarded. "He may be able to make one believe something exists when it really doesn't. In that case, the people would naturally believe them to be creatures which came at his beck and call."

"But the old man knew," objected Harl. "He knew that it was all mere suggestion. If all the people knew this the rule of Golan-Kirt would end abruptly. They would no longer believe in his omnipotence. Without this belief, suggestion, by which he rules, would be impossible."

"The old man," asserted Bill, "gained his knowledge in some mysterious manner and paid for its divulgence with his life. Still the old fellow didn't know all of it. He believed this entity came out of the Cosmos."

Harl shook his head, thoughtfully.

"It may have come out of the Cosmos. Remember, we are at least five million years in the future. I expect to find some great intelligence. It is physical, for the old man claimed to have seen it, and that should make our job easier."

"The old man said he was not immortal," commented Bill. "Therefore, he is vulnerable and our guns may do the work. Another thing—we are not to believe a single thing we feel, hear, or see. He seems to rule wholly by suggestion. He will try to kill us by suggestion, just as he killed the old fellow."

Harl nodded.

"It's a matter of will power," he said. "A matter of brain and bluff. Apparently the will power of these people has degenerated and Golan-Kirt finds it easy to control their minds. They are born, live, and die under his influence. It has almost become hereditary to accept his power. We have the advantage of coming out of an age when men were obliged to use their brains. Perhaps the human mind degenerated because, as science increased the ease of life, there was little need to use it. Some fine minds may still remain, but apparently they are few. We are doubters, schemers, bluffers. Golan-Kirt will find us tougher than these future-men."

CHAPTER III

The Struggle of the Ages

BILL produced cigarettes and the two lighted up. Slowly they walked across the vast arena, guns hanging in their right hands. People were filing into the place and the tiers were filling.

A roar came out of the tiers of seats before them. They recognized it. It was the cry of the gathering crowd, the cry for blood, the expression of a desire to see battle.

Harl grinned.

"Regular football crowd," he commented.

More and more poured into the arena, but it was apparent that the inhabitants of the ruined city could fill only a very small section of the thousands upon thousands of seats.

The two seemed lost in the mighty space. Above them, almost at the zenith, hung the vast red sun. They seemed to move in a twilight-filled desert rimmed in by enormous white cliffs.

"Denver must have been a large city at the time this place was built," commented Bill. "Think of the number of people it would hold. Wonder what it was used for?"

"Probably we'll never know," said Harl.

They had gained the approximate center of the arena.

Harl halted.

"Do you know," he said, "I've been thinking. It seems to me we must have a fairly good chance against Golan-Kirt. For the last fifteen minutes every thought of ours has been in open defiance of him, but he has not attempted our annihilation. Although it is possible he may only be biding his time. I am beginning to believe he can't read our minds as he could the mind of the old man. He killed him the moment he uttered a word of treason."

Bill nodded.

As if in answer to what Harl had said, a great weight seemed to press in upon them. Bill felt a deadly illness creeping over him. His knees sagged and his brain whirled. Spots danced before his eyes and a horrible pain gripped his stomach.

He took a step forward and stumbled. A hand clutched his shoulder and fiercely shook him. The shake momentarily cleared his brain. Through the clearing mist which seemed to hang before his eyes, he saw the face of his friend, a face white and lined.

The lips in the face moved.

"Buck up, old man. There's nothing wrong with you. You're feeling fine."

Something seemed to snap inside his head. This was suggestion—the suggestion of Golan-Kirt. He had to fight it. That was it—fight it.

He planted his feet firmly in the sand, straightened his shoulders with an effort, and smiled.

"Hell, no," he said, "there's nothing wrong with me. I'm feeling fine."

Harl slapped him on the back.

"That's the spirit," he roared. "It almost floored me for a minute. We've got to fight it, boy. We've got to fight it."

Bill laughed, harshly. His head was clear now and

he could feel the strength flowing back into his body. They had won the first round!

"But where is this Golan-Kirt?" he burst out.

"Invisible," snarled Harl, "but I have a theory that he can't put in his best licks in such a state. We'll force him to show himself and then we'll give him the works."

The frenzied roar of the crowd came to their ears. Those on the bleachers had seen and appreciated the little drama out in the middle of the arena. They were crying for more.

Suddenly a spiteful rattle broke out behind the two.

They started. That sound was familiar. It was the rat-a-tat of a machine gun. With no ceremony they fell flat, pressing their bodies close against the ground, seeking to burrow into the sand.

Little puffs of sand spurted up all about them. Bill felt a searing pain in his arm. One of the bullets had found him. This was the end. There was no obstruction to shield them in this vast level expanse from the gun that chuckled and chattered at their rear. Another searing pain caught him in the leg. Another hit.

Then he laughed—a wild laugh. There was no machine gun, no bullets. It was all suggestion. A trick to make them believe they were being killed—a trick, which, if carried far enough, would kill them.

He struggled to his knees, hauling Harl up beside him. His leg and arm still pained, but he paid them no attention. There was nothing wrong with them, he told himself fiercely, absolutely nothing wrong.

"It's suggestion again," he shouted at Harl, "There isn't any machine gun."

Harl nodded. They regained their feet and turned. There, only a couple of hundred yards away, a khaki-clad figure crouched behind a gun that chattered wickedly, a red flame licking the muzzle.

"That isn't a machine gun," said Bill, speaking slowly.

"Of course, it's not a machine gun," Harl spoke as if by rote.

They walked slowly toward the flaming gun. Although bullets apparently whistled all about them, none struck them. The pain in Bill's arm and leg no longer existed.

Suddenly the gun disappeared, and with it the khaki-clad figure. One moment they were there, the next they were not.

"I thought it would do just that," said Bill.

"The old boy is still going strong, though," replied Harl. "Here is some more of his suggestion."

HARL pointed to one of the arching gateways. Through it marched file upon file of soldiers, clad in khaki, metal helmets on their heads, guns across their shoulders. An officer uttered a sharp command and the troops began to deploy over the field.

A shrill blast of a bugle drew the attention of the two time-travelers from the soldiers and through another gateway they beheld the advance of what appeared to be a cohort of Roman legionnaires. Shields flashed dully in the sun and the rattle of arms could be distinctly heard.

"Do you know what I believe?" asked Harl.

"What is it?"

"Golan-Kirt cannot suggest anything new to us. The machine guns and the soldiers and legionnaires are all things of which we have former knowledge."

"How is it," asked Bill, "that we see these things when we know they do not exist?"

"I do not know," replied Harl, "there are a lot of funny things about this business that I can't understand."

"Anyhow, he is giving the crowd a good show," observed Bill.

The bleachers were in an uproar. To the ears of the two came the shrill screaming of women, the loud roars of the men. The populace was thoroughly enjoying itself.

A lion, large and ferocious, growling fiercely, leaped past the two men. A thunder of hoof-beats announced the arrival of more of the brain creatures.

"It's about time for us to do something," said Harl. He lifted his .45 high in the air and fired. A hush fell. "Golan-Kirt, attention!" roared Harl, in a voice that could be heard in every part of the arena. "We challenge you to personal combat. We have no fear of your creatures. They cannot harm us. You are the one we wish to fight."

An awed silence fell over the crowd. It was the first time their god had ever been openly challenged. They waited for the two lone figures out in the arena to be stricken in a heap.

They were not stricken, however.

Again Harl's voice rang out.

"Come out of hiding, you fat-bellied toad!" he thundered. "Come and fight if you have the guts, you dirty, yellow coward!"

The crowd may not have gathered the exact meaning of the words, but the full insult of them was plain. A threatening murmur rolled out from the bleachers, and there was a sudden surging of the crowd. Men leaped over the low wall in front of the seats and raced across the arena.

Then a sonorous voice, deep and strong, rolled out.

"Stop," it said. "I, Golan-Kirt, will deal with these men."

Harl noticed that the soldiers and the lion had disappeared. The arena was empty except for him and his comrade and the score of future-men who had halted in their tracks at the voice which had come out of nothingness.

They waited, tensed. Harl wriggled his feet into a firmer position. He slipped a cartridge in the gun to take the place of the one which had been fired. Bill mopped his brow with the sleeve of his coat.

"It's going to be brains now," Harl told his friend.

Bill grinned.

"Two mediocre intelligences against a great one," he joked.

"Look, Bill!" shouted Harl.

Directly in front and slightly above the level of their heads a field of light had formed, a small ball of brightness in the murky atmosphere. Slowly it grew. Vibrations set in.

The two watched, fascinated. The vibrations quickened until the whole field was quivering. As the vibrations increased the light faded and a monstrosity began to take form. Only vaguely could it be seen at first. Then it became clearer and clearer, began to take definite form.

Hanging in the air, suspended without visible means of support, was a gigantic brain, approximately two feet

in diameter. A naked brain, with the convolutions exposed. It was a ghastly thing.

The horror of it was heightened by the two tiny, pig-like, lidless, close-set eyes and a curving beak which hung directly below the frontal portion of the brain, resting in what was apparently an atrophied face.

The two were aghast, but with a tremendous effort they kept close hold on their self-control.

"Greetings, Golan-Kirt," drawled Harl, sarcasm putting an edge to the words.

As he spoke, his arm swung up and under the pressure of his finger, the hammer of the gun slowly moved backward. But before the muzzle could be brought in line with the great brain, the arm stopped and Harl stood like a frozen man, held rigid by the frightful power which poured forth from Golan-Kirt.

Bill's arm flashed up and his .45 broke the silence with a sullen roar. However, even as he fired, his arm was flung aside as if by a mighty blow and the speeding bullet missed the huge brain by the mere fraction of an inch.

"Presumptuous fools," roared a voice, which, however, seemed not a voice, for there was no sound, merely the sense of hearing. The two, standing rigidly, as if at attention, realized that it was telepathy: that the brain before them was sending out powerful emanations.

"Presumptuous fools, you would fight me, Golan-Kirt? I, who have a hundred-fold the mental power of your combined brains? I, who hold the knowledge of all time?"

"We would fight you," snarled Harl. "We are going to fight you. We know you for what you are. You are not out of the Cosmos. You are a laboratory specimen. Unknown ages ago you were developed under artificial conditions. You are not immortal. You fear our weapons. A bullet in that dirty brain of yours will finish you."

"WHO are you to judge," came the thought-wave, "you, with your tiny, twentieth century brain? You have come unbidden into my time, you have defied me. I shall destroy you. I, who came out of the Cosmos aeons ago to rule over the portion of the Universe I chose as my own, do not fear you or your ridiculous weapons."

"Yet you foiled us when we would have used our weapons on you. If I could reach you I would not need my weapon. I could tear you apart, destroy you with the strength of my two hands."

"Say on," rumbled the thought-waves. "Say what you believe me to be, and when you are done I shall obliterate you. You shall be dust floating in the air, ashes on the sands."

There was an unveiled tone of mockery in the brain emanations.

Harl raised his voice, almost shouting. It was a deliberate act, done in hopes the future-men would hear, that they might realize not too late the true nature of the tyrant Golan-Kirt. They did hear and their mouths gaped as they listened.

"You once were a man," Harl roared, "a great scientist. You studied the brain, specialized in it. Last year you discovered a great secret, which gave you the power of developing the brain to an unheard-of degree. Sure of your technique, and realizing the power you might

enjoy, you transformed yourself into a brain creature. You are a fraud and an impostor. You have mis-ruled these people for millions of years. You are not out of the Cosmos,—you are a man, or what once was a man. You are an atrocity, an abomination—”

The thought emanations which flowed from out the brain trembled, as if with rage.

“You lie. I am out of the Cosmos. I am immortal. I shall kill you—kill you.”

Suddenly Bill laughed, a resounding guffaw. It was an escape from the terrible tension, but as he laughed a ludicrous angle presented itself—the twentieth century travelers millions of years ahead of their time wrangling with a cheat pawning himself off as a god on a people who would not be born until long after he was dead.

He felt the horrible power of Golan-Kirt centering upon him. Perspiration streamed down his face and his body trembled. He felt his strength leaving him.

He stopped laughing. As he did so, he seemed to be struck, as if by a blow. He staggered. Then sudden realization flashed through him. Laughter! Laughter, that was it. Laughter and ridicule! That would turn the trick.

“Laugh, you fool, laugh,” he screamed at Harl. Uncomprehendingly, Harl obeyed.

The two rocked with laughter. They whooped and roared.

Hardly knowing what he did, almost involuntarily, Bill screamed horrible things at the great brain, reviled it, taunted it, called it almost unspeakable names.

Harl began to understand. It was all a great game that Bill was playing. A supreme egoism such as was lodged in the brain pitted against them could not bear ridicule, would lose its grip before a storm of jeers. For uncounted centuries, through some miraculous power, it had lived and in all that time it had been accorded only the highest honor. Derision was something with which it was unacquainted, a terrible weapon suddenly loosed upon it.

Harl joined with Bill and hurled gibes at Golan-Kirt. It was a high carnival of mockery. They were not conscious of their words. Their brains responded to the emergency and their tongues formed sentences of unguessed taunts.

Between sentences they laughed, howling with satanic glee.

Through all their laughter they felt the power of the brain. They felt its anger mount at their taunting. Their bodies were racked with pain, they wanted to fall on the sands and writhe in agony, but they continued to laugh, to shout taunts.

It seemed an eternity that they fought with Golan-Kirt, all the time shrieking with laughter, while they suffered fine-edged torture from the tops of their heads to the soles of their feet. Still they dare not stop their laughter, dare not cease their hideous derision, poking fun at the huge intelligence which opposed them. That was their one weapon. Without it the engulfing waves of suggestion which poured with relentless fury upon them would have snapped asunder every nerve in their bodies.

They sensed the raging of the great brain. It was literally crazed with anger. They were “getting its goat!” They were ridiculing the very life out of it.

Unconsciously they allowed the pitch of their laughter to lower. From sheer exhaustion they lapsed into silence.

Suddenly they felt the terrible force of the brain renewed, as it drew upon some mysterious reserve strength. It struck them like a blow, doubling them over, clouding their eyes, dulling their minds, racking every nerve and joint.

Hot irons seemed to sear them, hundreds of needles seemed thrust in their flesh, sharp knives seemed to slash their bodies. They reeled blindly, gropingly, mouthing curses, crying out in pain.

Through the red haze of torture came a whisper, a soft, enchanting whisper, a whisper beckoning to them, showing them a way of escape.

“Turn your weapons on yourselves. End all of this torture. Death is painless.”

The whisper fluttered through their brains. That was the way out! Why endure this seemingly endless torture? Death was painless. The muzzle against one’s head, a pressure on the trigger, oblivion.

BILL placed his gun against his temple. His finger contracted against the trigger. He laughed. This was a joke. A rare joke. Robbing Golan-Kirt by his own hand.

Another voice burst through his laughter. It was Harl.

“You fool! It’s Golan-Kirt! It’s Golan-Kirt, you fool!”

He saw his friend staggering toward him, saw his face pinched with pain, saw the moving of the livid lips as they shouted the warning.

Bill’s hand dropped to his side. Even as he continued that insane laughter, he felt chagrin steal over him. The hideous brain had played its trump card and had failed, but it had almost finished him. Had it not been for Harl he would have been stretched on the sand, a suicide, his head blown to bits.

Then suddenly they felt the power of the brain slipping, felt its strength falter and ebb. They had beaten it!

They sensed the gigantic struggle going on in that great brain, the struggle to regain the grip it had lost.

For years on end it had lived without struggle, without question that it was the ruler of the earth. They sensed the futile anger and the devastating fear which revolved in the convolutions of Golan-Kirt.

But he was beaten, beaten at last by men from out of a forgotten age. He had met defeat at the hands of ridicule, something he had never known, a thing he had not suspected.

His strength ebbed steadily. The twentieth century men felt his dread power lift from them, sensed the despair which surged through him.

They stopped their laughter, their sides sore, their throats hoarse. Then they heard. The arena resounded with laughter. The crowd was laughing. The horrible uproar beat like a tumult upon them. The future-men were roaring, bent over, stamping their feet, throwing back their heads, screaming to the murky skies. They were laughing at Golan-Kirt, screaming insults at him, hooting him. It was the end of his rule.

For generations the future-men had hated him with the very hate he had taught them. They had hated and

feared. Now they feared no longer and hate rode unchained.

From a god he had fallen to the estate of a ridiculous fraud. He was a thing of pity, an unclad clown, simply a naked, defenseless brain that had bluffed its way through centuries of kingship.

Through bleared eyes the twentieth century men saw the great brain, writhing now under the scorn of its erstwhile subjects, being laughed powerless. No longer did it hold control over these creatures of a dying world. Its close-set eyes glowed fiercely, its beak clicked angrily. It was tired, too tired to regain its rule. It was the end of Golan-Kirt!

The revolvers of the time-travelers came up almost simultaneously. This time the sights lined on the brain. There was no power to ward off the danger.

The guns roared rapidly, spitting hateful fire. At the impact of the bullets the brain turned over in the air, blood spurted from it, great gashes appeared in it. With a thump it struck the ground, quivered and lay still.

The time-travelers, their eyes closing from sheer weariness, their knees suddenly weak, slumped to the sand, the 45's still smoking.

Over the arena floated the full-toned roar of the future-men.

"Hail to the Deliverers! Golan-Kirt is dead! His rule is ended! Hail to the saviors of the race!"

Epilogue

IT IS impossible to reverse time. You cannot travel back to your own age. I have no idea of what will occur if you attempt it, but I do know it is impossible. We of this age knew travel into the future was possible, but we lacked the technique to build a machine to try it. Under the rule of Golan-Kirt there was no material progress, only a steady degeneration. We know that it is impossible to reverse time. We, as a people, beg you not to attempt it."

Old Agnar Nohl, his white beard streaming in the wind, his hair flying, spoke seriously. There was a troubled frown on his face.

"We love you," he went on, "you freed us of the tyranny of the brain which ruled over us for uncounted time. We need you. Stay with us, help us rebuild this land, help us construct machines, give us some of the marvelous knowledge which we, as a race, have lost. We can give you much in return, for we have not forgotten all of the science we knew before the coming of Golan-Kirt."

Harl shook his head.

"We must at least try to go back," he said.

The twentieth century men stood beside the plane. Before them was a solid mass of humanity, a silent humanity in the shadow of the silent ruins of the city of Denver, the future-men who had come to bid the time-travelers a regretful farewell.

A chill wind howled over the desert, carrying its freight of sand. The furs of the future-men fluttered in the gale as it played a solemn dirge between the ruined walls of humbled solenns.

"If there was a chance of your success, we would speed you on your way," said old Agnar, "but we are reluctant to let you go to what may be your death. We are selfish enough to wish to hold you for ourselves, but we love you enough to let you go. You taught us

hate was wrong, you removed the hate that ruled us. We wish only the best for you.

"It is impossible to go back in time. Why not remain? We need you badly. Our land grows less and less food every year. We must discover how to make synthetic food or we shall starve. This is only one of our problems. There are many others. You cannot go back. Stay and help us!"

Again Harl shook his head.

"No, we must try it. We may fail, but we must try it at least. If we succeed we shall return and bring with us books of knowledge and tools to work with."

Agnar combed his beard with skinny fingers.

"You'll fail," he said.

"But if we don't we will return," said Bill.

"Yes, if you don't," replied the old man.

"We are going now," said Bill. "We thank you for your thoughtfulness. We must at least try. We are sorry to leave you. Please believe that."

"I do believe it," cried the old man and he seized their hands in a farewell clasp.

Harl opened the door of the plane and Bill clambered in.

At the door Harl stood with upraised hand.

"Good-bye," he said. "Some day we will return."

The crowd burst into a roar of farewell. Harl climbed into the plane and closed the door.

The motors bellowed, droning out the shouting of the future-men and the great machine charged down the sand. With a rush it took the air. Three times Bill circled the ruined city in a last mute good-bye to the men who watched silently and sorrowfully below.

Then Harl threw the lever. Again the utter darkness, the feeling of hanging in nothingness.

The motors, barely turning, muttered at the change. A minute passed, two minutes.

"Who says we can't travel back in time!" Harl shouted triumphantly. He pointed to the needle. It was slowly creeping back across the face of the dial.

"Maybe the old man was wrong after—"

Bill never finished the sentence.

"Roll her out," he screamed at Harl, "roll her out. One of our engines is going dead!"

Harl snatched at the lever, jerked frantically at it. The faulty motor choked and coughed, sputtered, then broke into a steady drone.

The two men in the cabin regarded one another with blanched faces. They knew they had escaped a possible crash—and death—by bare seconds.

Again they hung in the air. Again they saw the brick-red sun, the desert, and the sea. Below them loomed the ruins of Denver.

"We couldn't have gone far back in time," said Harl. "It looks the same as ever."

They circled the ruins.

"We had better land out in the desert to fix up the engine," suggested Harl. "Remember we have traveled back in time and Golan-Kirt still rules over the land. We don't want to have to kill him a second time. We might not be able to do it."

The plane was flying low and he nosed it up. Again the faulty engine sputtered and missed.

"She's going dead this time for certain," yelled Bill. "We'll have to chance it, Harl. We have to land and chance getting away again."

Harl nodded grimly.

Before them lay the broad expanse of the arena. It was either that or crash.

As Bill nosed the plane down the missing motor sputtered for the last time, went dead.

They flashed over the white walls of the amphitheater and down into the arena. The plane struck the sand, raced across it, slowed to a stop.

Harl opened the door.

"Our only chance is to fix it up in a hurry and get out of here," he shouted at Bill. "We don't want to meet that damn brain again."

He stopped short.

"Bill," he spoke scarcely above a whisper, "am I seeing things?"

Before him, set on the sands of the arena, only a few yards from the plane, was a statue of heroic size, a statue of himself and Bill.

Even from where he stood he could read the inscription, carved in the white stone base of the statue in characters which closely resembled written English.

Slowly, haltingly, he read it aloud, stumbling over an occasional queer character.

"Two men, Harl Swanson, and Bill Kressman, came out of time to kill Golan-Kirt and to free the race."

Below it he saw other characters.

"They may return."

"Bill," he sobbed, "we haven't traveled back in time.

We have traveled further into the future. Look at that stone—eroded, ready to crumble to pieces. That statue has stood there for thousands of years!"

Bill slumped back into his seat, his face ashen, his eyes staring.

"The old man was right," he screamed. "He was right. We'll never see the twentieth century again."

He leaned over toward the time machine.

His face twitched.

"Those instruments," he shrieked, "those damned instruments! They were wrong. They lied, they lied!"

With his bare fists he beat at them, smashing them, unaware that the glass cut deep gashes and his hands were smeared with blood.

Silence weighed down over the plain. There was absolutely no sound.

Bill broke the silence.

"The future-men," he cried, "where are the future-men?"

He answered his own question.

"They are all dead," he screamed, "all dead. They are starved—starved because they couldn't manufacture synthetic food. We are alone! Alone at the end of the world!"

Harl stood in the door of the plane.

Over the rim of the amphitheater the huge red sun hung in a sky devoid of clouds. A slight wind stirred the sand at the base of the crumbling statue.

THE END

What Is Your Science Knowledge?

1. What were Minkowski's views on time? (Page 827)
2. What scientific event occurred on May 29, 1919? (Page 827)
3. What is a spiral nebula? (Page 830)
4. How is it possible to separate out the various electromagnetic wavelengths? (Page 843)
5. What was "Frankenstein?" Who wrote it? (Page 849)
6. How is it possible to compute one's position in space? (Page 862)
7. How hot is the interior of the earth at 25 to 40 miles below the surface? (Page 871)
8. What is the cause of volcanic eruptions? (Page 871)
9. What are the two great volcanic belts? (Page 872)
10. What experiments have been tried in the artificial production of rainfall? (Page 873)

The Terror From the Sea

By ROBERT ARTHUR, Jr.



(Illustration by Paul)

To the assembled almost despairing men, the radio poured forth the formulae. Already the Terror had broken through on him.

THE TERROR FROM THE SEA

CREY, rain-lashed, choppy waves surged in under the force of the storm. Huge combers rushing slantwise towards the beach, rolled up and broke in showers of spray over the sea wall, drenching in salt foam the land behind. Sullen fog hid the whole of Chesapeake Bay, and the fog bell at the extreme end of Old Point Comfort tolled its monotonous, warning note.

Back of it, hidden behind high walls, the old moat-encircled Fort Monroe, was partially sheltered from the shrieking winds that tore in from the ocean. The whole of the Virginia coast was battered and beaten in the furious assault by the combined forces of Father Neptune, wind and rain and wave, sweeping all shipping from the unusually populous channel.

Great roaring breakers rolled purposefully in between Capes Henry and Charles and broke against the outstretched tip of Point Comfort, parting and sweeping along the waterfront for miles to play havoc with the fishermen's tiny crafts.

On that day, the ninth of the long continued storm, the Terror was wafted in on the outflung spray of the breakers. It rushed in on the frothy tops of the huge waves from the mid-Atlantic, stole in under cover of the mist. It seemed as though the sea was aroused in anger against man and the land, was raking its depths for weapons to fling, as though Neptune himself was instigating a conquest of the earth.

Or perhaps, as scientists have said, the invasion was purposeful, skillfully executed by the attackers. It may have been aided by nature herself; an overwhelming invasion designed to wrest from man a supremacy long held; the stupendous effort of a super-intelligent organism to quit an element which had become distasteful to it, for another for whose inhabiting it had made preparations, centuries long.

Was it accident or design, that terrific catastrophe that nearly broke civilization into a heap of ruins, as a child would overthrow a house of blocks and carelessly throw the pieces aside?

Was the impelling force the same that causes men to set up colonies in far parts of the world, for emigration and profit? Or was it—but the reason matters little. The coming of the Terror is sufficient without the precise

reasons for it. We know it came, and looking back we can shudder at the closeness with which it approached its attempted object.

* * *

A soldier from the fort saw the first of the invaders. Shortly after the height of the storm he was forcing his way against the wind along the sea wall. Close by the regularly clanging fog bell a great wave dashed against

the stone, drenching him in its spray. When it receded the first specimen of the Terror lay at his feet.

It was green, the green of old moss, shapeless and leathery, more like a mass of seaweed than a living creature. It was small, the size of a large man's hand, perhaps. Countless tiny holes seemed to pierce the tough skin that enclosed a jellylike mass. For a moment it lay inert, then he prodded it with his foot and it stirred sluggishly, slipped back into the water from which it had come.

"Some funny kind of jelly-fish, I guess," he said to himself and forgot the matter.

The next day the creatures had appeared in numbers. They lay along the beaches of Old Point Comfort, lay

in the weeds and grass back of the protecting sea wall, lay even in the first street along the waterfront. From where or how they came none knew. The night and the storm spewed them up. As yet they had appeared nowhere else.

They increased rapidly and inexplicably in numbers. Later it was learned that their reproduction was terrifically rapid, comparable to that of the lower classes of protozoa and microbes. Tear one into pieces and in six hours each fragment had grown into a mature organism, deadly and vigorous as the original. And this process could be performed voluntarily.

THE first day or so they were treated as a curious natural phenomena, interesting but

harmless. They lay over the land near the water in shapeless, bright green masses, moving sluggishly to and fro, some starting a slow excursion along the first of the streets. A party of investigators met such a mass. One man ventured a few feet into the group. He poked them with his feet, lifted one on a stick to examine it.

"Nothing much to them," he called back to the rest.



ROBERT ARTHUR, JR.

***D**ESPITE our occasional excursions to the sea, it still remains practically unexplored, especially the deeper portions. The sea was presumably the birthplace of all life, and it must contain many secrets of early life forms, and strange developments of life from them that we know nothing of.*

We know that life in the sea is a much more bitter struggle for existence than on earth; and it is possible that many species of sea life have developed amazing vitality and cunning. They may even have developed intelligence.

If a struggle ever came between sea life and man, our race would fare badly. For although we have been able to conquer our large enemies such as wild animals, against our smaller and more numerous enemies such as the insects, we are helpless. A swarm of grasshoppers recently devastated several of our agricultural states, eating up every leaf, every plant and leaving tens of thousands of square miles virtual deserts. We would be similarly helpless against the billions upon billions of marine life, if an attack ever came.

Mr. Arthur gives us an exciting story of such an attack, a stupendous story of grim humor, courage and heroism.

"Like leather they are. They look funny but they can't hurt you."

He turned, and as he did something tripped him. He looked down in surprise, saw half a dozen clinging, evidently by the countless tiny suction pads that covered their entire bodies, to his feet and ankles. One was crawling slowly up his trouser leg. He kicked it off nervously and started to run. His feet caught, were clogged, and he stopped. From the sluggish green mass individuals seemed to leap into the air to a height of two or three feet, suddenly projecting underneath them tentacles that acted like springs. They caught and clung.

The man started to leap wildly, fell suddenly into the surging group. He tried to rise, but seemed to be pinned down. The entire colony for yards around was surging and swarming towards him, burying him under the weight of green bodies. Presently the mass was still. The rest of the investigators, seized with a sudden terror as the group began to fling out exploring individuals toward them, broke and fled. One man only stayed behind long enough to ascertain their method of locomotion.

They rolled forward, he announced later, with a sort of undulating movement on the order of the tractor. Shapeless and flexible of body, tentacles would be pushed forward from the rubbery mass, would seize upon the earth with suction grips, millions of them, and the whole animal would roll forward with a contraction of its muscles. They could leap too, for a space of at least a yard, suddenly forcing themselves upwards by shooting tentacles out underneath them. But on the whole their locomotion achieved perhaps a quarter of a mile an hour.

Even as the newspapers featured the strange and incredible story, the Green Terror struck its first blow. The waters around Old Point Comfort were suddenly teeming with the creatures. The land was swarming with them as they advanced to meet the edges of the wide, shallow moat that surrounded Fort Monroe. A great mass of them spread across the marshy strip of land leading down the coast to Buckroe Beach and another mass cut off the bridge across to the nearest mainland, forming a barrier impassable to anything living. Only the trains could rush at high speed through the hordes on the long trestle; and before the day was over even that was impossible.

Their approach caused a precipitate fleeing on the part of the population. But the Terrors came at night, stealthily, appearing in full force when the sun dawned, and not many people got away. The big boats to Norfolk, Washington, and Baltimore could traverse the water but the approaches to the dock were crowded with the creatures, and whoever attempted to force a way through was overwhelmed. Houses with windows firmly shut proved for a time an obstacle to the things, so at first they did not do more than surround them, concentrating on the fort behind its moat and its high ramparts.

The waters of the moat teemed with the Terror but the bridges leading into the fort had been dynamited and the openings securely closed. Behind the barriers of the stone walls the garrison was confident of its security.

For an hour, for two hours, it was secure. But then, with the whole of the point of land hidden under the surging green masses, as at a signal the Terror swarmed relentlessly up the stone walls. Suckers grasped and

the mass rolled up irresistibly, rolling itself over the perpendicular barriers. It gained the top and surged over, a green wave of invasion that came from all sides and overwhelmed the place.

Airplanes from the nearby Langley Field circled above the fort and uselessly dropped explosives upon the Terror. Cameramen photographed the event from the air, sitting in horrified safety and observing the beginning of the attempt to end man's reign. A pair of dirigibles achieved a little, swooping low and picking up a few scant scores of people. The rest perished under the rush of the Terror. The land was hidden under the palpitating masses of green.

Pictures and lurid descriptions were rushed to the waiting world. People far distant felt a surge of horror at the contemplation of the implacable, irresistible, overwhelming forces, then for a time forgot the subject. A quarter of a mile an hour? Six miles a day? Animals like that can't achieve more than local harm before they are checked! So they argued. So argued Joe Reiley, automobile mechanic, in Chicago to his fiancée, Mary Fields, as they watched the news reels of the event at the neighborhood picture house.

"Shux!" Joe said. "I don't guess we need to worry about those things. We're a thousand miles away, easy. Anyway, th' Gover'ment will tend to 'em." And Mary agreed with him as the main picture flashed on the screen, even though a radio flash brought just then even more startling news.

Even at the hour they discussed the things the Green Terror was appearing in full strength. By the countless millions and billions, reproducing itself every six hours, it was surging out of the ocean depths, flinging itself upon the land. The whole of the Virginia coast fell as at a signal after that first invasion of Old Point Comfort. Norfolk was overwhelmed in a day. Farther up the Chesapeake Bay, Baltimore and Washington were hidden suddenly under the creatures. The Government fled, first to Philadelphia, then to Chicago, leaving the proud halls of Congress to the invaders.

New York was made a focal point of attack. Dawn, and the inhabitants awoke to find the streets hidden under a curious carpet of green that grow and spread. In the flash of an eye, almost, business fell, the money markets crashed, chaos spread over the business world as the Stock Exchange disappeared, as the banks with the precious stores of gold to furnish necessary credit were swept under by the Terror. Up all the streets from the water, from all along the coast line, the Green Terror spread into the city.

MILLIONS of the inhabitants fled by train, by automobile, by foot to the temporary safety of the inland. Hundreds upon thousands were caught, surrounded by the green flood and starved in bolted houses and offices, or rushed out to a quicker destruction.

From Labrador to the Straits of Magellan the Green Terror rolled forth from the ocean, upon the land, concentrating upon the coast cities, penetrating inland up every river and bay, every arm of the sea, traversing every foot of the lonely coastal lands, they attacked in a far-flung line the ramparts behind which man stood. North and South America were being submerged by the Terror.

From the Pacific next, a day or so later, the hordes

appeared, rolled forward with their unvarying, unchecked speed of six miles every twenty-four hours, over land or through the inland waters. Up the Mississippi, past a stricken New Orleans, the Terror spread, working steadily outward from the water over the earth. The Americas were being hidden under a mantle of green death. The titanic struggle for the mastery of the land was begun.

The whole forces of the world were thrown into the conflict. Men labored desperately and materials were expended lavishly. Man was fighting for his life and he had no intention of succumbing without a struggle.

Scientists, in their laboratories, were the directors of the fight. How to destroy these creatures? How to check the Green Terror, to fling it back into the depths of the sea, loose its hold on the earth? Experiment, only experiment could tell. Time, they needed time to experiment, and meanwhile nothing could be done to stop the swarming hordes. While the experiments were being carried forward, the Green Terror was spreading, spreading over the world.

Specimens of the creatures were rushed to the laboratories of the world. France, England, and Germany concentrated on the problem in anticipation of their own need for defense. All the men boasting any science at all were furnished with materials and set to work.

What could destroy these creatures that were overwhelming mankind? The strong acids, yes. But acids in sufficient quantities could not be furnished in a century. Fire? Live steam? Yes, both, but they were not generally applicable. Poison gas? No, unfortunately. Examination showed the things to be possessed of very curious methods of extracting oxygen in proper quantities from almost any substance that contained it. Creatures that could extract their oxygen from the air dissolved in water were not troubled by anything less than a one hundred per cent concentration of chlorine or its kindred gases. And nowhere in the open could such concentrations be obtained.

Dynamite? No, they thrived on it. Further examination and it was found that the members of the Terror had not a central heart, but a complete system of hearts, a plurality of hearts, scattered through the whole organism, as well as a plurality of brain sections, each connected with the rest but each a separate organ. Blow one up and the pieces simply grew, each into another creature. One individual was cut into a hundred pieces. In six hours ninety-five full grown individuals fed greedily on the food supplied. The food did not matter. Whatever it was, it suited the Terror. Vegetable or animal, it was all the same. It surrounded the food with itself and absorbed it through its skin.

But what would destroy it? The question went unanswered. Gas, explosives, poisons, even microbes were tried and rejected. And the scientists had consumed six precious months in unavailing research.

In those six months the Green Terror made progress toward covering most of the world. A hundred and eighty days at six miles a day, steadily maintained over the highest mountains and through the thickest forests. A thousand and eighty miles, working in from every point of the sea shore, is enough to cover the greater part of most of the continents.

Another two months and the two Americas were hidden beneath the hordes. South America was a deso-

late waste where a few men and animals survived in the very highest peaks of the Andes, men so low in intelligence that the Terror did not bother to pursue them to extinction. From the ice of the Pole down the Terror had spread over Canada. The United States showed a waste land where the Green Terror had passed, leaving deserted cities and barren stretches of earth for hundreds of miles in its wake. A few millions of the Americans still lived, fighting from behind, the walls of fortified cities. Fortified cities protected in the only possible manner, by a ring of flame.

In Chicago, the principal center of civilization left, fifteen million people were crowded. Forty miles from the city a trench ran, entirely circling the metropolis, running close to the edge of Lake Michigan where it was necessary to go through part of the city itself. In this trench a fire burned steadily day and night. Every drop of gasoline or combustible oil, all combustible materials were confiscated to be doled out as needed to keep the fire always burning. A ring of flame, six feet wide, three feet wider than the distance the Terror could leap, burning at the bottom of a ditch fifty feet wide and fifty feet deep. And the Green Terror had not crossed it.

It hovered outside of the ring, however, besieging the inhabitants, knowing that eventually the food supply would vanish. Even now that was going. At the beginning a few far-sighted individuals had started to collect food in immense warehouses, then the Government had stepped in and collected every scrap of food available from the surrounding country. On rations, it was possible for the fifteen million people to exist another three or, at most, four months. After that . . .

A World Besieged

OTHER great cities of the world existed in the same way. England had been submerged beneath the flood of the Green Terror in the third month. The rest of Europe still held out in spots. Berlin and Paris formed the principal lines of resistance, though a minor sanctuary had been established in Switzerland, behind which the scientists worked feverishly, seeking the salvation of the race. Elsewhere Europe was a barren desert. All of Asia had disappeared beneath the tide of invasion save the more remote and mountainous sections in the interior. Some of the central sections of Russia were as yet untouched. Australia was conquered, save for a great camp some twenty miles inland from Melbourne where a million or so of people and all possible stores had been concentrated.

Africa was as yet touched only around the fringes of the continent. Within the fastnesses of the jungle still lived savages ignorant of the catastrophe. Evidently the Terror felt no great need for haste in subduing man.

Besides Chicago, a few more cities of the North American continent—Cleveland, Montreal, Denver, Minneapolis, and Saint Paul—and a few scattered others preserved the remnants of mankind. And in each, feverishly, night and day, men labored in their laboratories trying to find the effective means to combat this invasion from the deep.

Through the newspapers Joe Reilly had watched with ever growing bewilderment the spread of the invasion. "What? Them things eating up millions of men?"

he said to Mary Fields. "Why—why—they're animals an' we're men. They oughtn't to allow it!" And Mary, similarly puzzled, agreed with him.

Later there was formed the voluntary army that was to defend the city. Joe volunteered. So did Mary. She was put to work in a great municipal mess where the food was rationed out to the hungry hordes. Already the conservation had begun, with the Terror yet hundreds of miles away. Joe was set to work first in digging the great protective ditch in the bottom of which the fire was kept burning. At first it was planned to dig other ditches and wire them for electric current, but tests showed that the Terror simply ignored ordinary electric manifestations, and this was abandoned. Later Joe was made a mechanic engaged in keeping in repair the tanks and engines that furnished liquid fuel to the ditch—gasoline and kerosene and other materials that kept the guardian fire burning.

And for a time the Green Terror was baffled. At least, it came up and investigated the fire and drew back, content to wait rather than sacrifice itself by plunging into the flames and smothering them.

During the fourth month of the siege Joe was hastily summoned to a great electrical plant where his mechanical skill was needed in the construction of great arc lights and giant bulbs, of millions of candle power.

For the first slight crumb of success had fallen to the struggling scientists.

Out of the turmoil and despair of the laboratories where men struggled in vain to check the menace came news of several things. The first was that the creatures of the Green Terror were rich physically in the essential salts of the earth and that their dead bodies made wonderful fertilizer. Which news was no good at all at the moment. The rest of the announcement was that light somewhat stronger in intensity than the sunlight was a detriment to their activities and a light strong enough was deadly. It had been noted that the Terror was appreciably more active at night than when the sun was up. Now the solution became clear.

Light was distasteful to them, used as they were to the cool darkness of their ocean depths. It blinded them, for they saw through their skins, and it interfered with the digestive processes of their skins. It unbalanced the nervous systems of these creatures whose physical constitution was such that they could live and exist on land or sea, from the ice of the poles to the sweltering heat of African jungles. And so light was seized upon as another defensive weapon against them. Still mankind had no offensive weapon.

Great batteries of searchlights sprang up around the edge of the flaming line. Lights giving off millions of candlepower were turned upon the sullen greenish hordes that lay in wait outside. Lights that would burn a man at a distance of several miles shone forth on the creatures, who precipitately drew back two or three miles from their former positions outside the circle.

Joe was wildly exultant.

"We got 'em!" he proclaimed joyfully to Mary. "We got 'em now. I told you they couldn't kill all the men, give us time enough. They're afraid of the lights an' they can't come near us as long as we got lights and a fire."

But in the laboratories men still toiled. They looked forward to the day when the last available calorie of heat

with which to produce electricity might be gone and the powerful lights dark; to the time when the last vestige of food would have gone; to the time when the fire would go out. And against that time they strove desperately in a race against the Green Terror and the extinction of man.

What were the thoughts of the Terror itself during this time? No man may know, though it is quite generally agreed that they were intelligent creatures, fully capable of judging actions and results. Undoubtedly they must have realized the menace the fortified cities presented to them. The use of light against them must have appeared as but the first of the weapons that the struggling men might conceive and utilize. And so it seems clear that they sent a note of warning, those members of the Terror first stricken by the light, to the numberless hordes that ranged the world. And a warning also to prepare for the final attack, to be made before man might find some yet more dangerous weapon.

But meanwhile the scientists and men of learning still struggled in their laboratories, trying and testing and discarding method after method. And airplanes swept out over the countryside like the dove from the ark of Noah and reported that constantly increasing masses of the Green Terror were converging upon the cities from all directions, coming from the districts already devastated and laid to waste, where the cities were crumbling, empty skeletons of buildings.

AND men worked desperately, for the day when the food would be gone and the fuel consumed was almost upon them. Already the desperate throngs of people were being fed upon the Green Terror itself, which proved palatable and nourishing after certain treatments. But the source was limited due to the difficulties of capture, though unlimited billions of the creatures were at hand.

Meanwhile, in this last extremity, somewhere an unknown man was working out the salvation of the race. Where he was, who he was, young or old, it is possible that no man will ever know. Probably his laboratory was somewhere in the upper peaks of the Andes, or in the remote fastnesses of the Canadian Rockies. He neglected to say, though the last seems more likely. Whoever he was and wherever he was, he worked there as desperately as any man in the beleaguered cities.

Though we do not know him, we can guess at his circumstances, gleaned from the meager tale he broadcast to the world.

He was situated in some remote region, probably, where the Green Terror penetrated in only small numbers. Perhaps he was securely hidden in the earth, or in a rocky cave. Perhaps he had food stored, or perhaps he hadn't. At least he had a radio to communicate with the world, a good radio luckily. And we can surmise his travail and toil and his stumbling upon success. He told the world that, in part.

Months of weary, fruitless work passed upon specimens captured by himself from the small band that besieged him in his barricaded laboratory, unable to get at him while he interposed stout walls of earth or rock in their way. Then came his learning over the radio of the partial triumph of light over the Terror. Then came his new trend of thought.

Since light affected their nervous systems, he investi-

gated to learn why. No results came for a long while. And then arrived that day when he was experimenting, with a draft of wind sweeping through his laboratory. A wire, part of the radio equipment, stretched taut across the wall began to vibrate shrilly and unpleasantly. At the moment he was working with a fresh batch of organisms he had just captured. The shrilling of the wire annoyed him and he rose to catch it in the middle and fasten it there, shortening it by half. It kept on shrilling but with such a high note that it was totally inaudible to him. He returned to his work.

But now he noticed the members of the Terror he had trapped were showing signs of agitation. They stirred restlessly and darted forth tentacles, waving them and tossing uneasily. He was nonplussed for a moment, then as a thought struck him he loosened the taut wire that was vibrating. The movements of the Terror ceased.

"Vibrations!" he shouted triumphantly and plunged at once into a new set of experiments.

It was not solved in a day. But once on the right track he advanced rapidly. Luckily the needful radio was at hand. He constructed apparatus and broadcast indiscriminate sounds, first on infinitesimally short waves and then on long waves, as long as he could produce.

The short waves, he found eventually, if strong enough bothered the Terror considerably, but not vitally. Very long waves gave a more marked effect but still the Terror was only mildly uneasy. After a period of time, he found, the nervous system of the creatures could accustom itself to the short waves or the long waves. But when it received the two together, the nervous systems were shattered in a vain attempt to take care of both sets of waves at once. Broadcasting a combination of extremely short waves and extremely long waves close to an individual, he found that it exhibited for a moment extreme agitation, leaping violently into the air before it settled back lifeless, dead from the disruption of its multiple nervous system.

But would this thing he had discovered work out over large areas? He must hope for the best and reduce his experiments to a point where other scientists could utilize them. And he must do it soon, for as though divining its danger the portion of the Terror besieging him had in some way been working its way through crevices of the stone walls and there was left but a thin layer between himself and them. Hours of desperate work and he was ready to give his findings to the world, though already the Terror was breaking through upon him. He had neither the material nor the time to construct apparatus powerful enough to save himself from the creatures.

"Attention! . Attention!" his frantic radio message was picked up by the astonished Chicago station. "Message to the world. Please answer."

The answer he desired was furnished and at his request the most eminent of the scientists gathered around the precious instrument from which his thin, high voice was issuing.

"Ready, world? Please note carefully the formulæ I am about to give. They are the results of my experiments in subduing the Green Terror. Note data carefully. Note formulæ and results, please!"

And to the assembled, astounded, almost despairing men the radio poured forth a flood of physical and electrical formulæ, numbers and sizes and lengths of wires,

of coils, and of powers and materials and such things. They were received as would be the gift of renewed life by a dying man.

Three times, in a clear, high voice the unknown experimenter repeated his findings, then stopped for a moment. Leaning forward in tense silence, the assemblage heard the last words of the savior of mankind.

"Have you got all that? I hope so because I can not give it again. No time. Whether it will work on a large scale or not I can't tell. It worked for me. It's all up to you now. I'm finished I guess. The Green Terror has broken through the wall here. They're invading the place. They're thick in here now, swarming over my apparatus. I'm standing upon the table and I've emptied several big jars of acid on the floor to quell them temporarily, but not for long. The fumes are sickening. Well, they've jumped the table now and are swarming over me. Nothing I can do. Well, so long world. I hope that you get through . . ." the voice broke off suddenly.

No, we do not know his name, whether he was young or old, or where he was. But in a rebuilt Chicago a gigantic statue, hundreds of feet in height, of a man giving life to the world, honors the memory of the unknown man.

Last Hours

WORLD wide activity. Feverish scientists, at first sceptical, then wildly excited. The remaining man power of the world turned towards the construction of the necessary apparatus. Great radio stations and titanic generators were constructed; radio stations of a peculiar type were built without end. And all the while the grim specter of the end in sight.

What was left of mankind was watching the final, desperate attempt of the Green Terror, which seemed to realize the need of haste.

Watching from his light tower on a night of the sixth month of the siege, Joe Reiley saw over the brilliantly lighted fields a curious swarm advancing purposefully toward the ring of fire that still encircled the city. It came closer, the Green Terror throwing its massed legions against the stronghold of men. Lights flared up, blazed up brilliantly, to no avail. Steadily, in the face of the illumination that had always previously discouraged it, the Green Terror pressed on. It came closer and Joe saw the reason.

"Shields!" he croaked hoarsely. "They've got shields. Got pieces of stuff over them to keep the light off. God!"

It was the truth. The billions of members of the advancing horde had supplied themselves with coverings of various kinds and under the protection were rolling forward implacably, relentlessly.

Men almost forgot to breathe in the intensity of the next hours. The fire will hold them! That was the impassioned prayer that went up from every heart of mankind. And while they prayed, the Green Terror approached the circle of flames, hesitated a moment, then rolled down into the deep ditch, relentlessly filled it with bodies. A minute and the fire was smothered, extinguished under their weight. The Green Terror rolled on towards the city.

Joe saw it all in a kind of helpless horror.

"They've got through! They've got through the

fire!" he gasped uncomprehending to himself.

Minutes passed, then a sudden realization of the matter swept over him.

"We're as good as dead now, me and Mary!" he gasped to himself. He turned then and hastened back to the city, which was hemmed in now on all sides by a contracting ring of invaders.

On the lake side the Terror had concentrated by the billions and in one mighty wave had poured out of the water and into the city. Mankind's last barrier was down.

Joe's first act was to hunt for Mary. He found her in the wreck of the great municipal mess, which had been torn apart by fear mad millions seeking the last remnants of food.

"Where can we go?" Mary screamed piteously, clinging to Joe. "There ain't no place! They've got us! They've got us!"

"I guess so," Joe acknowledged dully. "Them animals! An' us men!" he stared in dull wonderment towards the rioting crowds in the streets. Then he shook himself. "We got to do something," he said. "I say we go to the top of the tallest building we can find and stay there. Maybe they won't find us." He knew they would, but he said it to cheer Mary. They turned and began hurriedly to walk towards the business section of the city.

The last barriers were down but still a little group of men struggled on. They fought on in the laboratories, in the shops, finishing up the last bits of apparatus according to the specifications given by the unknown man who had radioed out of space. Would they work? Man's last hope was that they would.

The workers were almost finished when the Green Terror entered the city. Scientists were fitting the last bits into place while the Terror ranged through the streets of the city, flinging itself even into the laboratories. With the green invaders literally surging around their feet technicians snapped into place the last cogs of the great net work of wave emitters that covered the city.

"It's either good-bye or thank God," muttered a man briefly to his companion as the two watched the great meters which would indicate the turning on of the tremendous power that had been created by the mighty

whistling generators.

"The damn things are outside the door now. If it fails—" he shrugged, eyes fixed on the meters. The great hands of them shook suddenly, then moved over the faces of the dials as the electric current began to run through the intricate coils, to be cast forth in tremendous waves of invisible power upon the destroyer. Man's final word! Outside there came a rasping and scratching on the door.

Joe stared with fascinated horror down the stairs, up which the first of the Terror was coming. He and Mary were on the last floor of the building they had chosen to hide in. They were alone here by chance. In their numbed state it had not occurred to them to shut and bolt the entrances to hold out for a time longer the hideous things that were slowly creeping up the stairs after them.

"Oh, Joe! Oh, Joe!" Mary was wailing helplessly. "It's come. It's come."

"It's come!" Joe repeated dully. "They found us, Mary. And think of it. Us! Humans! And them animals! It shouldn't be."

In helpless horror they watched the approaching, slug-gish green mass.

It rolled relentlessly up the last of the steps and Joe and Mary backed away, backed to the farthest corner of the last room. One of the green, leathery things leaped forward and seized Joe's foot. He shuddered violently, but made no movement to kick it off.

Another one rolled up, stopped suddenly. It twisted as though in pain, leaped up and fell with a plop! back to the floor. Joe heard a dry, rustling sound throughout the whole building, the whole city, as the Green Terror writhed and leaped in torment. The thing on his foot fell off, fell limply to the floor, was motionless.

Joe stared uncomprehending. It was Mary who raised her head and began to laugh wildly, eyes shining brilliantly.

"We've won, Joe! We've won! They're dead. Humans have won!"

"God!" Joe kicked the dead thing by his foot and hugged Mary more tightly. "You're right, Mary. They're all dead. Humans have won!"

THE END

AT THE END OF THE SPECTRUM By THE PLANET PRINCE

Once a space-ship, filled with beetles

Faced the unknown; sailed from Neptune,
Sailed into the empty heavens
Soared into the mighty vacuum.

They explored the solar system
Making weighty calculations,
Marking moons and mapping planets
Filling books with great equations.

Then, approaching one great planet
Covered o'er with seas of air
Which was dark unto their vision
Murky, desert, ocean bare.

For their sight sense was so different

That they saw but ultra-waves,
Which, invisible to mankind,
Yet reflect from air to space.

"Is it possible," one shouted,
"That life be on a plane that lays
Far below this seething mixture
Which shuts out our Ultra-rays?"

"Fifteen pounds an inch, I've figured
Would lie upon each poor inmate,
No! If life dared such unheard pressure
It would surely meet its fate."

So they turned their space-ship homeward

While was entered in a tome,
"Earth is barren, life unthought of,
It is drown'd in some strange foam."

Lord of The Lightning

(Continued from page 877)

Thornton understood the pointing gesture. Out of the mass of smoke and cloud that pressed down on the top of the mountain, the long, blunt nose of the dirigible poked itself like a pale ghost. It wavered hesitantly, then turned directly toward the volcano. Already a good portion was in sight, but the first gondola had not yet emerged from the cloud.

Darrell turned. "He's driving blind and is going right over the crater," he shrieked. Another violent quake opened a long crack down the side of the mountain, from which tiny rivulets of smoking lava began to seep. The heat was almost unbearable. Thornton nodded, eyes fixed on the slowly moving dirigible with a terrible fascination.

"Yes," he shouted, "they have a searchlight to guide the return but there's nobody to work it now."

A SUDDEN upheaval in the depths of the pit sent the clouds and vapors swirling away in all directions and revealed the entire scene; the great airship hovered over the edge of the cavity, slowly drifting ahead, and the panic-stricken crew on board, in spite of reversed motors, could not halt its progress. Then El Descabezado erupted in real earnest. There was a vast roaring as the seething lake of lava boiled over the rim and spouted hundreds of feet into the air. The front portion of the dirigible was showered with red-hot magma, and in an instant, with a smashing concussion, it split open in mid-air in a single blasting sheet of flame. Darrell, who had grabbed Thornton and dashed away as soon as he realized what was about to happen, felt a crushing weight upon him, pressing blackly at his head, and he fell. He fought off the threatening faint, however, dragged the other to his feet, and continued their wild flight down the mountainside. As they plunged on, volcanic "bombs" whistled viciously through the air and thudded into the earth around them. Gradually

these ceased, and only the terrible roaring from far above pursued them.

After passing from the upper reaches of the mountain, they felt rain falling around them. This refreshed Thornton and cleared his head somewhat. He immediately began to pull their headlong course to the left considerably. After ten more minutes running through the ragged edge of the already spent storm, the two men slowed to a walk. The path of the lava flow was far away; the storm had passed. They threw themselves wearily on the ground and slept till dawn.

Early next morning Darrell and Thornton picked their way down the slope to the remains of the tiny town. Already the natives who, forewarned, had escaped the danger, were clearing up the wreckage left by the tumultuous waters of the night before and preparing to rebuild their homes.

After being overwhelmed by the thanks of the town officials and admiring populace, the two went to watch the work of reconstruction.

Darrell, after looking around vaguely, asked, "What happened to the lava flow?"

"Turned to the right and spilled down into the canyon where we landed yesterday, five miles away. Missed the town entirely."

"Yesterday! Good Lord, it seems ages. Well, it's all over but the shoutin' now."

"Yes. That puts 'finis' to the case of the boiled fish that ended with boiled . . ." Thornton's voice trailed off into silence.

"Yeah." Darrell inserted gum between his lips.

The drone of an airplane came to them from the south. Their pilot had returned. As the sun burst over the mountains they took off again for Concepcion where Darrell sent the dispatch which loosed the bonds of panic from the world and sent it spinning again in its accustomed groove of peace and freedom.

THE END

THE SPACE MIRROR— World's Greatest Peace-War Weapon

BY HUGO GERNSBACK

Editor, WONDER STORIES, EVERYDAY SCIENCE AND MECHANICS

An invention, possibly one of the most marvelous ever to be conceived in the brain of man, is described in full in the December issue of *EVERYDAY SCIENCE AND MECHANICS*. The Space Mirror is the invention of Prof. Hermann Oberth, one of the world's greatest authorities on space flying.

It is such a titanic and at the same time such an amazing peace implement, that it fairly staggers you. Yet, it will come about very soon.

Artist Paul has illustrated the article with two pages of his marvelous drawings.

If you are at all interested in space flying do not fail to read this article.

IN THE BIG DECEMBER ISSUE
EVERYDAY SCIENCE AND MECHANICS

The *Andromeda* Menace

(Concluded from Page 867)

navigator he pressed a button that set up a flow of repulsion waves between the two ships.

Mabry swung the bow of the *Sirius* toward the center of the *Andromeda*. The pull would be less this way. Beams, pumps, wreckage of all kinds smashed against the sides and base of the freighter, whirled off where the repulsion waves were flowing, and stuck like leeches at other places on the hull. Through the glass walls of the two turrets Mabry could see the drawn, tired faces of the *Andromeda's* officers. But they, like the liner, were helpless.

Together the two men, commander and navigator, worked to contact the passenger ship. Perspiration streamed from their bodies as the heat from the fiery gases blazed through the glass of the turret. Blair gradually reduced the repulsion waves as the navigator worked the *Sirius* toward the other ship. The *Andromeda* struck the nose of the freighter with a slight bump, hung for a moment, then swung around until they were side by side.

"Contact!" Mabry snapped. Blair pressed a button sending a magnetic flow through the skins of the two ships, gluing them tightly together. A deep sigh came from the officers in the turret and was echoed by those on the *Andromeda*.

"We've got her if she'll hold," Mabry grunted. "Do you record the flow, Mr. Davis?"

"Strong," Davis answered.

Mabry ordered quarter power on the motive cylinders, then half as the pull of the burning gases held steady. Slowly the huge freighter, with the passenger ship sticking to its side, drew away from the menace of the fiery mass. And as the air in the turret cooled and they sped once more on their course, a lean face below a tousled mop of hair appeared on the vision screen.

"Commander Powell of the *Andromeda* speaking," the lean man said slowly. "We thank you for the contact, sir. Can you tow us to New York?"

"We can," Mabry answered. "Will you hold together for a hard pull?"

"I think so, sir. We are all right forward, and my officers are making a survey of the rear end. I will have a report in an hour or less."

"Commander!" Jud Anson stepped to the screen and scowled at Powell. "We have a valuable cargo on board. Must get to Earth soon as possible. If we tow you it will delay us too much. We will put into Arno on the Moon and leave you there."

Powell's eyes roved over the face of Jud Anson.

"May I ask who you are, sir?" he inquired. "You have no rating bars—"

"I am Jud Anson, general manager of the Solar Lines," Anson replied.

The commander of the *Andromeda* eyed Anson with a twisted smile.

"I prefer to speak to your commander or navigator in regard to a tow, Mr. Anson," he stated quietly. "You have no standing out here."

"I have enough to—"

"Mr. Horan. Will you see that Mr. Anson is made as comfortable as possible when you put him in irons?" Mabry interrupted.

Blair sprang to his feet. "Don't do that, Jimmie," he cried. "You'll—" Bascom pulled the commander back into his seat, spoke rapidly. Blair gasped when he heard about Anson's family being aboard the *Andromeda*. He stared from Anson to Mabry.

Horan placed a hand on the general manager's shoulder. Anson whirled, struck at the assistant navigator. He called on Blair and Bascom to help him. Then he suddenly found himself lying on the floor with Horan, Petrie, and Wilson snapping handcuffs and leg irons on him. He cursed and threatened as he was dragged to his feet.

"Mr. Mawson, will you please show Mr. Anson your extra passengers?" Mabry asked.

The navigator stepped aside, motioned Horan and Petrie to bring Anson to the desk. Then the faces of the general manager's family appeared on the screen.

Anson gasped and turned pale. His legs buckled under him. He dropped into the chair vacated by Mabry and stared at his wife and daughters.

"They've told everything, Anson," Jimmie Mabry said sternly. "You'll have a lot to answer for when you go up before the Council."

"We are away from the pull of that fire, Jimmie," Wilson reported. "She shows nine-tenths less than one now. Will I order full power, sir?"

"Not yet, Jerry. We want to get current lines onto the *Andromeda* first. Her batteries will not last to Earth."

A call came from the screen. "My officers report the hull in good condition for a tow, Mr. Mabry," Commander Powell reported. "You will take us to Earth?"

"Right!" answered Jimmie Mabry. And the two ships, side by side moved swiftly toward the distant Earth.

THE END.

TURN TO PAGE 859 FOR
CONTENTS NEXT MONTH

The Time Stream

(Continued from page 847)

mary of what he himself considered his fair open-mindedness.

"I accept nothing without first weighing all the evidence pro and con," he retorted.

"Especially con," Ducasse murmured, with some deep subtlety of meaning which only he appreciated.

"Do you honestly mean to say," Culman demanded incredulously, "that you have seen nothing whatever of all these things that the rest of us have been going through? Or aren't you just bluffing?"

"I most certainly do," Beckford maintained stoutly.

"Then I give it up," Culman addressed himself to his Kummel with an air of obstinate resignation. "When Ducasse's ring struck with a click against the window of the smoker, he and I plunged clean out of this universe into another. We lived ages in that other place, wherever it was, in time. Yet we were gone from this world only the briefest fraction of a second. For just when Ducasse put up his hand to brush off a fly, I happened to be looking out of the car window at a particular apricot tree in full blossom. We were nearing Palo Alto at the instant. The train was going about forty miles an hour. And when we came back to this universe I was still looking at that same tree. As I noticed the fulness of its blossom, it flashed past the window and out of my sight."

"If you were 'gone,' as you expressed it, only a fraction of a second, how could you have lived all those ages in another existence?" Beckford demanded.

"That is easily enough explained," Sylvester broke in. "Or rather it is not difficult to give a fair analogy."

"Go ahead, then," Beckford laughed. "I'm open to conviction, even if I am a lawyer."

"It is like this. Suppose you are watching a moving picture story. Say it takes fifteen minutes to run the whole film on the screen. For those fifteen minutes the film is being turned—unwound, if you like—at a steady rate, and its pictures are being thrown on the screen just as fast as you can take them in and follow the story. But suppose the operator speeds up the film so that the whole story flashes on the screen, not in fifteen minutes, but in the hundredth part of a second. What would you see? Nothing but a quick blur, if you saw even that much. Most likely your eye would record no impression whatever, although the whole story would have been moving on the screen before you. To your mind the screen would just remain a white blank all the time."

"I get the point," Beckford interrupted. "If my sight, or mind, or whatever it is that takes in the story, were speeded up in the same way that the film was, I should see the pictures exactly as before."

"Yes, and you would notice nothing unusual. You couldn't tell, without some outside check, that you had spent only the hundredth part of a second in seeing the whole picture, instead of the fifteen minutes necessary in your normal state."

"And it is like that, I imagine, in the time stream," Savadan remarked. "It flows at vastly greater rates in some stretches of its course than in others. And when we enter it our minds adjust themselves auto-

matically to the new time scale. What seems a second here may very well be actually an age in Eos. And I have sometimes thought," he continued, exhaling a cloud of cigar smoke, "that the rate of flow is not always the same in a given part of the stream. What I mean is," he explained, "that the early history of Eos, for instance, may have flowed at an enormously greater speed than that at which our own life is now streaming past and through us, while its later history may be transpiring at an infinitely faster or slower rate than our own. And this fluctuating change of speeds may be happening from instant to instant forever, all down the past and future of the time stream."

"Ingenious, if true," Beckford commented drily. "I am driven to the conclusion that my fat, legal brain is too slow a fish for the kind of swimming you fellows seem to be such whales at."

"And you make a mental reservation," Palgrave finished for him, "that we're all crazy except yourself."

"Perhaps," Beckford admitted.

"WHAT is it they call a man who believes everybody but himself off?" Ducasse inquired softly.

"A lunatic, sah," the Colonel promptly informed him, eyeing Beckford with disfavor. "When I dropped my silver pencil case on the floor of the dressing room at the baths, sah, I had an experience exactly like what Ducasse and Culman have been telling us about."

"Are you all back yet, Colonel?" Herron asked innocently.

"I'm here, sah, am I not?"

"And what did you see?" Beckford inquired with a faint sneer.

"I saw no puppies, sah!"

"Any smooth pink dogs, Colonel?"

"Are you insulting me, sah? This is a scientific investigation!"

"No doubt," Beckford replied with an evil touch of sarcasm. "That's precisely why I'm so interested in the natural history of the purple insects you discovered, Colonel."

"Look here, you two idiots," Palgrave cut in evenly, "if you're going to start a brawl, I shall ask the dishwashers to chuck you into the street. This is a serious business, and we're in it to the end. Have another benedictine, Colonel? Beckford, try one of these new Arabian cigarettes. They're the latest out, and not half bad."

When peace had been restored with the coming of the Colonel's dainty drink, Savadan resumed.

"You inexperienced swimmers need such mechanical aids—noises, accidental sights, and so on—to send you back into the stream. For years I was the same way. In time you will master the simple, inexplicable trick of entering the endless flow by an involuntary exercise of the mind. Not even yet am I perfect in the art myself. But I am sufficiently skilful to accomplish the feat within any twenty-four hours that I may wish to make the trial. So after you left my lodging last night I made an intense effort to project myself into

the time stream, expecting that you, not having recovered from your first shock, would soon find yourselves back again in the past. I succeeded this afternoon about one o'clock."

"That must have been about when we entered," Culman said. He drew out and consulted a Southern Pacific time-table. "Yes, the train reaches Palo Alto at one-ten."

"And fortunately we met in the stream almost immediately," Savadan resumed. "I think we shall have to enter only twice more to learn the whole history of the other world. Events there are sweeping toward their climax at a bewildering speed—compared to our time-scale in this part of the stream."

"What makes you think so?" I asked. As I spoke I struck a match to relight my pipe.

"It is hard to say," he began, "beyond a blind intuition I can give no very satisfactory reason for my feeling. One sign, however, in which I place much confidence is the usual clearness of my memory as to what happened on our last plunge. As a rule I can recall only a few meager fragments of what I have seen. This time the whole picture is developing like a photograph, with extraordinary rapidity, on the back of my consciousness."

My match went out, and I struck another.

"That is how we feel," I said. "At first we had a fairly clear memory of what we had seen. Then this life rolled up like smoke and rapidly obscured everything but a few broad outlines. Now, as the others have been saying, it is all coming back again. And it is more vivid than ever."

My second match went out, and I sat idly watching the charred stick as it twisted over into a blunt hook. Suddenly the tip snapped off with a sharp click. In a flash I noted the spasm of amazement which for an instant lit all faces but Beckford's. Then the table, the musicians, and the room vanished.

We had plunged once more into the time stream. . . .

"Steady, steady," I heard Ducasse's voice in my ear. "I'm holding you. Look at your precious fire ball, man! It's still here, as big as ever. You haven't lost your toy. It's the full ninety-nine hundred arm spans in circumference. And it hasn't shrunk the breadth of your little finger since you measured it. Are you all right now?"

"Yes," I groaned. "How are the others?"

"They felt it too. I did myself. But I kept a grip, and managed to bring us all back before we had drifted through the future clear back to the beginning of everything. It was a close call. I thought we had gone for good. That was the worst slip yet."

Culman rose from his bench and staggered toward the main door of the life analysis laboratory.

"Fetch the mad woman and her lover," he said, still gasping for breath. "We must finish our work before we die. I slipped into the stream just then. The next time may be the last. Eos must be saved from ruin, if it is to be saved, while we live."

"Hurry," Ducasse said, pushing me toward the main door. "Culman is right. There is no time to lose."

I stumbled from the Chamber of the Undying Fire

to seek Cheryl and her lover. I knew well where they would be found: under the scarlet tree, waiting the summons of the Council. For they were no less anxious than we, but for another reason.

A HUSH fell upon the throng of Councillors. We were seated in the spacious rotunda of the life analysis laboratory. The last attendants, all of whom had been released from duty while we went into advisory session, hurried from the echoing chamber. As the last of them vanished through the far doors, all eyes except those of Cheryl and her lover sought with a questioning gaze the reiterated legend deeply cut into the metal of the walls:

Remember the Beast.

Were we about to trample all our ancient traditions in the dust, or should we rise stronger for the conflict from this decisive trial of strength, reason more firmly established than ever as the supreme law in Eos? The faces of the Councillors for the most part expressed doubt and great weariness. Only a few of the younger men read the admonition to remember the beast with any light of hopefulness in their eyes. On all faces, perhaps, there was a faint shadow of hostility. These men, I felt, would be just but not sympathetic with the man and woman before us for examination. Too much hung on the issue for any softness to show itself.

Seated comfortably before us on the easiest sediles were Cheryl and her lover. The man I dimly recognized with a shock of surprise in a new and strange light. Surely, I thought, he was the substance behind that unreal shadow whom we had met in the dream life beyond Eos under the name of Beckford. I glanced rapidly from Palgrave to Culman, Sylvester, and the others of our exploring party. In their eyes flickered the same instant amazement. Then it died out. How had we met him in the time stream? He had not been sent back. For a moment this disturbing vision seemed but another proof of the real existence of that shadowy future life beyond Eos. But on a second thought I dismissed this as an hallucination. Not till the end of the session did we learn the truth.

Both Beckford's faintly sneering lips and Cheryl's composed face expressed indifference and disbelief. The disbelief no doubt was honest; the other was assumed. Else why should these rebellious lovers, of their free wills, have come to this last examination before the Council? By our law of freedom they had the option of ignoring that summons. Allegiance to the law of reason is voluntary.

But, had they refused to come when we called, theirs would have been the first disobedience in the recorded history of Eos. They came, perhaps, from idle curiosity to learn the secret of the time stream, or possibly from bravado.

Palgrave sat directly opposite them in his customary seat as leader of the Council. Speaking gently, in his natural, kind voice, he opened the proceedings with the formula usual in examinations of this sort.

"Man and woman," he said softly, "stand up, that we may see the soundness of your bodies."

(To be continued)



Science Questions and Answers



This department is conducted for the benefit of readers who have pertinent queries on modern scientific facts. As space is limited we cannot undertake to answer more than three questions for each letter. The flood

of correspondence received makes it impractical also, to print answers as soon as we receive questions. However, questions of general interest will receive careful attention.

Between Space Ships

Editor Science Questions and Answers:

1. Can radio waves travel in a vacuum? As the Heaviside Layer bars all waves, how can this be tested unless under extensive artificial conditions? And unless it has been proved, radio sets with which imaginary interplanetary explorers converse in the void are impossible, are they not?

2. Has it ever been proved that gravity draws light waves from distant stars? I and a friend had quite a discussion over it, and I held that gravity had no effect on light.

Linus Hosenmiller,
502 N. Washington,
Farmington, Missouri.

(1. All electromagnetic waves, of which radio waves are a part, can travel through a vacuum. The electromagnetic waves include heat, light, ultra-violet, cosmic rays, etc. Although no definite test of this has been made with radio waves, because they are assumed to travel easily in a vacuum, a test could be made. Both the antenna of the transmitter and the receiver could be placed in a vacuum.

As a matter of fact, electromagnetic waves travel fastest, and with the least diminution of power in a vacuum. This should be true also of radio waves. There should be no difficulty in two space ships conversing with each other by radio, provided they had powerful enough sets. There would probably be some interference from the rays of the sun, but the extent of this is not known.

(2. Einstein postulated as part of his Relativity Theory that light has mass and should be attracted by other masses. This was proved in the eclipse expedition of 1919 when it was shown that light rays from distant stars were drawn out of their paths when passing close to our sun, by the sun's gravitation. Of course the attraction is minute but it is still perceptible.—Editor)

Range of Magnetism

Editor Science Questions and Answers:

The impulses given off by magnets have often puzzled me, and I would like to know how far the rays of one would go. Is there any way in which these rays might be made to go in a straight line, instead of the circular form? Is there any substance or device that will stop these impulses?

James Whitaker,
619 East Main St.,
Olney, Illinois.

(There is theoretically no limit to the range of magnetism, except that, beyond a distance varying with its strength, the field would be so weakened that it would be imperceptible. The lines of force between the poles of a magnet have to curve, in order to get from one pole to the other; the least curvature of the external field, of course, is in a horseshoe magnet where the poles are close together. There is no known substance that will "stop" magnetism; but iron and some alloys will absorb a large part of the flux of a magnetic field, allowing few of the lines of force to pass beyond.—Editor)

Frankenstein

Editor Science Questions and Answers:

Just who was Frankenstein? Of what was the sun composed? If a metal and glass were composed to stand the sun's heat, would it be possible to explore old Sol?

Ralph Feigenbaum,
58 E. 97th St.,
New York.

(Frankenstein is the hero of a novel of the same name written by Mary Godwin Shelley, wife of the 19th century poet. A monster is created by a medical student, and turns against his master and slays him. The term has been generally used to denote any monster of our Creation who turns against us. But as a matter of fact, Frankenstein was not the monster but the creator.

The surface heat of the sun is estimated at about 12,000 degrees. The interior which is much hotter is composed of highly ionized gases compressed under terrific pressure. The interior conditions are very difficult to imagine in the light of matter that we are familiar with. It is hard to imagine a metal or glass able to resist melting in the heat of the sun's atmosphere, not to say its interior. However, we would like to know why anyone should want to explore the interior of the sun. He might just as well explore the furnace of one of our great power plants or the blast furnace of a steel mill.—Editor)

and is it possible as some say that it would require no power?

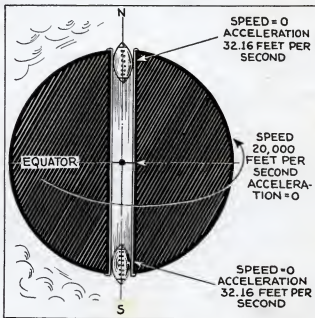
James Stephens,
10 Cotter Lane,
Dawson, Alaska.

(It is possible, theoretically, to travel through the earth without expenditure of power, if one travels by antipodes. In other words if one could bore a tube through the earth, through the earth's center, and emerge 180 degrees from the starting point, this tube theoretically could be used for the fastest method of transportation. For then any object that was placed at the opening of the tube would fall toward the earth's center. The fall would be begun with the acceleration of gravity at the earth's surface, 32.16 feet per second per second, and as one fell farther and farther his speed would be increased, but the acceleration would be decreased.

For the force of gravity decreases as one goes toward the center of the earth.

At the very center, one would be moving

Showing how a car could travel from the North to the South pole without power of any kind. The gravitation of the earth will pull it with increasing speed toward the earth's center. As a car passed the equator with its maximum speed, the earth's attraction will gradually begin to slow it up, until when it reaches the South pole it will automatically come to rest.



Through the Earth

Editor Science Questions and Answers:

I have heard it mentioned often that the quickest way to travel from place to place on the earth is through the earth itself. Is this really possible,

at nearly four miles a second. The trip to the earth's center would have taken about 33 minutes.

Rushing past the center, the car or object would start the second lap of its journey, to the surface again. But now its speed would be slowed up. For the center of attraction of the earth, which is at the earth's center, would retard his speed. And this retardation would be in the same proportion as the increase in speed as the object fell from the surface to the center.

When at last the surface was reached again, the car would have automatically come to rest. The second half of the journey would have taken about 33 minutes, the total journey consuming a little over one hour.

This assumes two things. The first is that there is no air resistance. If such a tube were built, the air from our atmosphere would immediately rush to fill it. If the air were permitted to remain, it would naturally retard the speed of the falling object or car. See (Continued on page 905)

READERS

If you like "Science Questions and Answers" in this magazine, you will find in our sister magazine, EVERYDAY, SCIENCE AND MECHANICS, a similar department, greatly expanded called "The Oracle." Look for it, you science fans!

Reader Speaks

IN this department we shall publish every month your opinions. After all, this is your magazine and it is edited for you. If we fall down on the choice of your stories, or if the editorial board slips an occasionally, it is up to you to voice your opinion. It makes no difference whether your letter is complimentary, critical, or whether it contains

a good old-fashioned brick bat. All are equally welcome. All of your letters, as much as space will allow, will be published here for the benefit of all. Due to the large influx of mail, no communications to this department are answered individually unless 25c in stamps to cover time and postage is remitted.

Commerce With Mars

Editor WONDER STORIES:

I would like to add my voice to that of your readers. I formerly read the science fiction magazine you edited, but have now transferred my allegiance to WONDER STORIES. I commenced reading science fiction when the "Moon Pool" was first published in your magazine. If I remember rightly, this was illustrated by Paul, and in my opinion his drawings helped largely to make the story the success that it was.

Paul's work is the best I have seen in science fiction magazines, and the weird and wonderful machines and living things he evolves are a real pleasure to study; in fact they are often better than the stories themselves.

The idea of printing the photograph of the author with his story is quite good and I wish more editors over here would do the same. With regard to interplanetary stories, I consider that new ideas are badly wanted here. There is a sameness about them that causes one's interest to slacken.

Some authors write about interplanetary commerce. How is this going to affect the world involved? Take it this way: say Mars has no iron and lead. The Martians exchange other lighter commodities for the iron from Earth. The balance of weight exchange favors Mars, who gains at the rate of say a quarter of a million tons per annum. This goes on for centuries. What is going to happen?

Earth will become lighter in weight. Will it not move nearer to the sun, or will the loss in weight to its great bulk become negligible?

I have only one real bricket to throw at your stories, and that is that there are too many killings in some of them. I know that a violent death or two is supposed to give a tang to a yarn, but the wholesale murders depicted by some authors bore me stiff. Cannot we have science fiction without all these killings?

The reading of such stories is bound to have a harmful effect upon young people for it accustoms them to the idea of wholesale destruction of human life, which will take place with grim reality in future wars. These will be hellishly more uncomfortable if one is a participant than reading about the sufferings of someone else from a safe distance.

I think your discussions columns in "The Reader Speaks" are very good, and I personally read them first. Some of the critics are too severe and I am sure that the letters a few of them send you will make you discouraged, but you evidently believe that a "softer answer turneth away wrath." Your replies to scathing letters are much too mild; and a good trouncing by a practiced writer like yourself would do them good.

Arthur D. Ellis,
2, Edward Road,
Mirefield, Yorkshire,
England.

(Mr. Ellis opens so many roads for our comment that we don't know quite where to start first. Regarding the variation in weight of the planets due to interplanetary commerce, we aren't seriously disturbed. In the first place, it will never be profitable, unless one planet has elements that are absolutely lacking on the other, to transport ordinary minerals. Naturally if Mars had no iron at all, it might be as precious there as radium is here. And Martians might be glad to trade some of their "tinny and superfluous radium" for a bit of that "priceless iron."

Furthermore, the mass of the earth is in the order of 5,600,000,000,000,000,000 tons.

Even quadrupling Mr. Ellis' rather large esti-

mate of a balance of weight against the earth of 250,000 tons a year, in one million years the earth would have lost 1,000,000,000,000 tons or about .0000000015 per cent of its mass. So there is really not much to worry about for the next few days or so. Regarding harsh letters to us, we know that after all those who criticize us severely must be interested in us. For if one is indifferent he doesn't bother to criticize. So those critics are the straying sheep that we want to save and keep in the flock. Although many readers have written us harsh letters, they have rarely stopped reading WONDER STORIES. Our only temptation to answer critics severely is when under assumed names they write letters that are imprudent.—Editor.)

The New Llano Colony

Editor WONDER STORIES:

In glancing over your "Reader Speaks" department I noticed in your comment on the letter of Mr. Stuckman of Friendswood, Texas, the statement that if the "Llano," (pronounced "Llan") colony was really existing, you would like to know more about it.

The Llano colony is a reality, and has been in existence for some sixteen years. I was there last year and spent a week in the colony. The colony is located at New Llano, La., in the western part of the state, about 100 miles south of Shreveport. It is a cooperative organization in which every member works for the common good.

There has never been any profit sharing for the reason that the colony started deeply in debt and the members have worked their way up through many of the hardships of a pioneering existence to the point where they are practically free of debt. They now own many of the necessary industries that keep them employed.

There is a charge made for membership in the colony, but many people are taken in without membership, and are allowed to work it out.

There has been much dissatisfaction and discontent and many people have left the colony. Some have gone permanently and others have returned later; but the colony has nevertheless shown a continual growth.

The general manager is Mr. George Pickett. He has a big job, and is filling it in a big way.

I would suggest that anyone who is interested write the colony at New Llano, La., for some of their literature. They publish a paper called the Llano Colonist. They are trying to demonstrate that unemployment is unnecessary, and that cooperation will solve world problems.

H. B. Brown,
11129 Grevillea St.,
Inglewood, Cal.

ON LETTERS

BECAUSE of the large number of letters we receive, we find it practically impossible to print them all in full. May we request our correspondents, therefore, to make their letters as brief and to the point as they can; as this will aid in their selection for publication? Whenever possible, we will print the letter in full; but in cases where lack of space prohibits publishing the complete letter, we will give a resume of it in a single paragraph.

(This is extremely interesting news about the Llano Colony. We suggest that our readers interested in the cooperative experiment write to the colony. We would be glad to learn of the experiences of any of our readers in connection with it. We will write to the colony, ourselves, and will let our readers know what we discover.—Editor.)

We Do Not See Life, But Existence

Editor WONDER STORIES:

I would like to comment on A. Rowley Hilliard's excellent story "Death From The Stars" which appeared in the October issue of WONDER STORIES. In my opinion not enough stories of this type are printed in scientific magazines. Stories of life and the struggle for existence; stories as in Hilliard's in which the reader is given some idea of Life of what man is—of what man is up against; of puny man's struggle against the titanic forces of nature.

What is Life anyhow?

How many times has that unanswerable question been asked? Is it, as Hilliard says, a disease "or corruption which afflicts stagnant matter which is our earth"? That is a very good description, is it not? But it is not an explanation or definition.

Here is man perched precariously on his little planet, struggling for mere existence, "like bacteria on the surface of an apple." But what is he? I have no theory. That is perhaps the greatest question, the greatest mystery that faces man, the question of what he himself is—and his origin.

Life is but a minor force among all other mighty forces of the Cosmos. There are other forces, infinitely greater than that of life. The rise of life on this or any other sphere is but a second in the infinity of the great Cosmos—as many have aptly stated. And like a match, it flares for a minute and then dies.

But is there not a chance that Man or Life may sometime in the mysterious future, dominate over the other forces and reign supreme? There may be other forms of Life in our galaxy, or rather in our plane of existence. But no one, no matter how colossal his imagination, can begin to guess what other forces may possibly resemble life in some respects, or may be compared with life, in countless other planes.

I have not said this clearly, but what I mean is that we do not see life but we see existence.

Carlyle J. Bessette,
Charlotte, Vermont.

(Unfortunately, Mr. Bessette's picture of the insignificance of all life is quite true. However, the ray of light is that life, at least on earth, has but begun. We do not know how long it may exist, but there is the possibility that intelligent life will remain on our planet long enough to reach a high degree of development. Then life may begin to understand itself.

Mr. Bessette should not forget either, that the difference between us and the bacteria "on the surface of the apple" is that we understand ourselves and our limitations, and the probability is that the bacteria do not. Furthermore, this world that we see that so frightens us by its immensity, is a world of our own creation. Our minds and our tools of science have created it. Therefore, we have the vision to appreciate immensities. And any creature that can do that, is not so insignificant.—Editor.)

(Continued on page 905)

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ALSO

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FOR

PAUL, WONDER STORIES famous artist, is now illustrating for **EVERYDAY SCIENCE AND MECHANICS**. For many years Paul's illustrations have been a favorite with our readers and in this new magazine many wonderful scientific events have been featured by this popular artist. Most amazing are these illustrations which we are sure every reader of WONDER STORIES will want to see.

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Do You Want Science Fiction Movies?

We address this question to all lovers of science fiction.

Motion picture companies are asking this question, too. But despite the success of science fiction in this country, and the rapidly growing reading public, the number of science fiction movies that have appeared in America have been pitifully few.

"Metropolis" and "By Rocket To The Moon" were German films; only "Just Imagine" which was after all a humorous rather than a realistic film, "The Mysterious Island" and one or two others have been filmed in America.

Now comes news that Universal is filming "Frankenstein," and "the Invisible Man" of H. G. Wells; and that R-K-O has a film resembling the "Mysterious Island." But these few films are mere crumbs thrown to the hungry lover of science fiction. And even the millions who do not read science fiction, who are lovers of adventure, and exploration in new places and times, are becoming tired of the monotony of sex, gangster and war pictures.

Do You want Science Fiction Movies?

If you do, you have but to make yourself heard. Many of our readers are writing to film companies to make their desires known. **BUT THAT IS NOT ENOUGH!** Film companies are guided by the wishes of thousands and tens of thousands, not by a few letters here and there.

Wonder Stories Will Make Your Demands Count

We are organizing a gigantic petition signed by all those who want science fiction movies and will present this petition to the large motion picture companies. **IT IS UP TO YOU** as lovers of science fiction to make this a success.

Get Five Signatures to This Petition

and return them to us at once. We will gather them together and *show the motion picture companies the enormous demand for science fiction movies.*

Sign this petition yourself, get four other signatures of your friends and relatives and return them to us. We will do the rest!

If you wish additional petition blanks write to us for them immediately.

**EDITOR, WONDER STORIES,
98 Park Place,
New York.**

We the undersigned, herewith add our voices to the great demand of lovers of science fiction, for the production of a reasonable number of Science Fiction Movies in America. If such pictures are produced, we will support them loyally and urge our friends to do likewise.

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SCIENCE QUESTIONS AND ANSWERS

(continued from page 901)

oody, the effect of the rotation of the earth upon the car is ignored. It is assumed that the best place for such a tube would be along the rotational axis of the earth, roughly between the north and south poles. Here there would be a minimum of effect from the earth's rotation. If the tube, on the other hand, were constructed through the equator, the centrifugal force of the earth's rotation would tend to fling the car against the walls of the tube with great force.

The accompanying diagram shows the earth in section, with a tube from the north to the south poles.

The principle illustrated, however, is one in which transportation could be afforded from one point on the earth to a place farthest away in one hour with no expenditure of power.

Naturally such a tube is quite impossible with our present science. Not only the difficulty of building it, but the intense heat near the earth's center are unsurmountable objections. A story in which these objections are overcome, however, is *THE EARTH TUBE* by Gawn Edwards.—Editor.)

Blood . . . Blood . . . Blood

Editor, *WONDER STORIES*:

Dennis McDermott should alter his style somewhat if he hopes to please the public with any successors to "The Red Spot of Jupiter." The public is not interested in stories in which the murderer gets away with it, but in the character of unmitigated evil who triumphs all the time goes against mass morals, and it is mass morals that pays for print.

Besides it serves no useful purpose. Also, when the writer speaks of the "rich red blood of Earth . . . and its warm sweet taste . . ." what mental man has he got himself into?

Such stuff is NOT THRILLING, NOR EXCITING.

NOT DRAMATIC, nor sensational.

PROBABLY NOT CORRECT! I don't know whether the author has dictated much on human blood. I am not such an expert.

NOT OF LITERARY VALUE—but neither has it popular appeal—merely intensely boring and silly.

"Blood . . . blood . . . blood . . . and plenty of it" (vide Captain Killemquik in penny horrors of 40 years ago).

The moment where Gulliver is left unattended, free for no reason whatsoever to arm himself, is forced and unnatural.

Scientific interest, of course, is entirely nonexistent.

Vic Filmer.

The "Mitre" Club,
177 Regent St.,
London, W-1, England.

(Mr. McDermott's answer to Mr. Filmer is that Gulliver is not simply a bloodthirsty criminal. He is a man, according to the author, who ran afoul of the authorities through no fault of his own.

Naturally, in this day of murderous racketeers, it is difficult to sympathize with the bloody criminal who removes his enemies from his path with no compunction. But that is not the sort of a man the author tried to present as Gulliver. In the incident on Jupiter, Gulliver was simply fighting for his life; and he acted, no doubt, as any human being would act.

In the January *Wonder Stories*, the adventures of Gulliver will probably be carried on, and we will see this interesting character in a new life. We invite Mr. Filmer to tell us whether he sees Gulliver any differently, after reading the second adventure.—Editor.)

On the "Aura"

Editor, *WONDER STORIES*:

Here is my first letter to *WONDER STORIES*, although I am guilty of writing one to the Editor when he edited another magazine. So you can see that I am still with him.

Recently I have noticed that quite a number of letters in "The Reader Speaks" deal with the Aura, and discuss the visibility of the human Aura. Our readers seem to be quite interested

(continued on page 906)



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THE READER SPEAKS

(Continued from page 905)

in the subject so if I may I will tell you what our Honorable Editor, Mr. Gernsback, told me (and a lot of others) sometime ago. He even had an elaborate cover illustrating the article.

By using two watch crystals, or any other method whereby there was a small space left between two panes of glass, and filling that space with a solution of Diquinin (a blue coal tar dye) in alcohol, or water, I have forgotten which, the instrument was constructed. Making a pair of glasses or one glass long enough to screen both eyes, you take your finished product and look through them at a bright light, then at the subject of which you wish to see the aura. Whether you were to look through the glasses at the subject, or remove them and then look I don't recall.

The correct solution one would have to figure out for himself, as I remember that you didn't give it. There has been some argument as to whether the results were caused by eye fatigue or whether the screen effect on the eyes really enabled one to see the invisible aura, as for myself when the article first came out I was all hot and bothered to try it.

So I went to a chemical supply house and priced the diquinin and was told that it was \$16.00 an ounce, not less than an ounce being sold. Not having the \$16.00 I decided to wait until I did have it and in consequence I have not as yet performed the experiment.

Glasses of the type mentioned were advertised for sale for a short time and then the advertisement disappeared, why I don't know.

Now, to some more important business. I have been reading WONDER STORIES ever since it was first published, and I guess I always will, unless something goes rotten in New York. One of my favorite authors is A. Rowley Hillier, and his last story "Death from the Stars" was certainly a fast moving, interest holding, tale. Nathan Schachner and Arthur L. Zagat certainly know how to get together and write. One seems to live with their characters, and I am wondering how the Sam Hill is Garry Parker, in "Exiles of the Moon," going to make his mission to earth a success, especially after getting himself caught in disguise. I guess I will just have to wait and see.

Say, what have you done with Francis Flagg? You haven't had a story by him for a long long time. His style of writing along with his characters and their unique bodies and planes of existence, seem to make one live and think with them, drawing all your sympathy, giving much relief when they have succeeded. What do you say that we have more, lots more, by him?

I have no bricks to throw, as I have the habit of reading what is before me, and if I like it I remember it, if I don't like it I promptly forget it. I also figure that it takes all kinds of stories to make the magazine, as all kinds of people read them, and it's a mighty hard job to please everyone, at which I have begun to think you are a master.

Just keep on giving us the same kind of fare we have been getting, and keep on improving it each month, as you have been doing, and I won't kick.

John E. Walker,
4234 Montclair St.,
Los Angeles, Calif.

(We are afraid, as we have stated several times, that if a human "aura" exists it will not be seen in any such simple way as looking through some chemical solution. There are possibly a hundred explanations that might account for seeing "something" surrounding the subject. We know that with cheaply made telescopes the solar body observed seems to have around it a rim of light that might properly be called its "aura." However, we would be glad to learn of the experiences of any other of our readers. —Editor.)

From County Cork, Ireland

Editor, WONDER STORIES
Happening to glance through the letter columns of WONDER STORIES, the August, 1931 issue, I noticed a letter from Holland. I determined to let you hear from Ireland, if you haven't heard from it before, and enable you to say that your magazine is read by too many. I have a friend in America who sends me science fiction magazines, and although I get

THE READER SPEAKS

plenty of others, I don't get WONDER STORIES as often as I would like. I am an ardent science fiction fan, and firmly believe in the triumph of the rocket interplanetary vessel. I have a sort of hunch that the deciding factor in the struggle for a perfect fuel will be completed about the year 1984 or 1985. I just can't explain why I think this but I guess that plenty of people will understand me.

I remember the old WONDER STORIES and think emphatically that the new magazine is a vast and pleasing improvement.

I have a fantastic thought troubling me. May I unburden it to your sympathetic pages? It is just an idea. I was studying the rocket fuel data in the September issue of WONDER STORIES and I wonder if there could be a way of storing energy in the form of electricity on a rocket fuel by means of a catalyst or an electrolytic substance, to be released suitably to boost up the pure force of the fuel. It is hard to express in words, but I guess the idea is best comprehended in the mind.

F. Grattan,
11, Franklin Terrace,
Summerhill South,
Cork, Ireland.

(Mr. Grattan's idea is not so far fetched as one would think. Many first-class minds are now attacking the problem of seeing how extra energy could be added to that which our present fuels possess. For example, in interplanetary space there would be the limitless energy of the sun. How can this be utilized to drive a rocket ship? Many rocket experimenters are pondering the matter carefully. And there is little doubt but that the coming generations, possibly some youth of today, will strike upon the solution, and make interplanetary travel a reality.)

We invite Mr. Grattan to write us again, when he feels again inspired.—Editor.)

In Every Part of the World

Editor WONDER STORIES:

One again I would like to intrude into your columns to tell our many friends about the progress of the American Interplanetary Society.

Despite the usual summer suspension in our activities, the membership showed a steady and pronounced growth over the summer which is indicative of the widening interest in the rocket and its possibilities.

Our membership now extends to every part of the world, as well as in every state in the Union.

The Society is making plans for rocket experimentation in collaboration with Dr. H. H. Sheldon of New York University, and is encouraging experimentation among its members. It is also making closer contacts with the Interplanetary Societies abroad, with the view to establishing a real International Interplanetary Association.

The New York members meet twice monthly at the American Museum of Natural History, 77th St. and Central Park West, and at public meetings lectures on the various rocket and interplanetary problems are discussed.

The Bulletin of the Society, which is issued monthly, has found considerable favor not only among the members, but also from Public Libraries. In the Bulletin are found summaries of the progress made in rocketry during the month, as well as special articles on interplanetary questions.

The Society invites to its associate membership men and women who want to receive our Bulletin and help us to carry on our work of education and experimentation to bring closer the day when the rocket will become a powerful force in our lives. Associate membership may be obtained by sending the first year's dues, \$3.00, to the Secretary. Applicants for active membership should write to the Secretary for an application blank. Active membership dues are \$10.00 yearly.

The Society includes many members from readers of WONDER STORIES. We are glad to add to our numbers from your readers.

Nathan Schnecker, Secretary
American Interplanetary Society,
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(The progress of the American Interplanetary Society has been unusual, and it augurs well for the success of its ideals. The support of readers of WONDER STORIES to the program of the Interplanetary Society is recommended, for by such organized support the realization of these tremendous stories of our writers will eventually come true.—Editor.)

What Story Do You Favor?

Editor WONDER STORIES:

Since I was among those who praised your adoption of a smaller size last year, it might seem inconsistent for me to commend your return to the original large format. Nevertheless, after seeing the November issue of WONDER STORIES, I must admit that the present size is the better after all. The greatest improvement, of course, is the use of smooth paper, which, combined with clean-cut edges and fine art-work, renders the magazine just about perfect. In make-up and appearance, it is unquestionably the leader in its field.

I was highly gratified to note that you have taken up my suggestion for more science fiction movies, and I certainly hope you can put the idea across. I think the campaign would be more effective if some specific stories were used for picturization. Even a widespread demand for scientific films will not get results unless accompanied by a definite request for certain pictures. It might be advisable, therefore, to have your readers vote on what works of science fiction they wish to see screened.

A few other science-fiction stories which would make excellent films are: "The Second Deluge," by Garrett P. Servis; "Quayle's Invention," by John Taine; and "The Return of George Washington," by G. F. Worts. But I really favor "The Time Traveler" and I hope to see it on the screen before long.

Allen Glasser,
1610 University Avenue,
New York, N. Y.

(We believe that Mr. Glasser's idea is an excellent one. In order to get our readers' opinions, we ask you to write us, telling us your suggestions for the best science-fiction story to film as a movie. Send us in your votes, and we will tabulate them and obey the wishes of the majority. The movement for science fiction movies is going over big, but it will need all of our effort and enthusiasm to make of it a real success. Let's go and send in those coupons!—Editor.) (Continued on page 908)

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Congratulations! Without a doubt **WONDER STORIES** is now, in every way, the best science fiction magazine published.

As to who is your best author,—is it Starzl? Keller? Williamson? Every reader, I suppose, has his own opinion; here is mine, and I'll bet my choice comes as a sort of surprise, too. Your best author, in my estimation, is not one of the old-timers, but one of your comparatively recent authors: none other than A. Rowley Hilliard. Look at what he has given us so far: *The Green Torture*; *The Avening Ray*; *The Island of the Giants*; *Death from the Stars*—every one of them an excellent story from an excellent author. Let's have more from him.

By the way, *Exiles of the Moon* is by far the best story Scaccher and Zagat have yet written.

HENRY HASSE,
1126 Townbridge St.,
Indianapolis, Ind.



TELEVISION NEWS

Timely developments in radio's latest wonder, **TELEVISION**, are published in every issue of **TELEVISION NEWS**—Mr. Hugo Gernsback's latest magazine. Rapid advancement in this art is becoming a repetition of the radio cycle of years ago. Daily broadcasts are becoming more numerous, and experimenters are following in quick order in building television sets for experimental purposes. Foresight of its development can be seen by the pioneers of radio—they are equipping themselves now with television experience.

Regular Departments in TELEVISION NEWS

Color in Television;
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THE READER SPEAKS

(Continued from page 907)

Comments on Our New Dress

(We present here brief notes from the comments of our readers on the new dress of **WONDER STORIES**. The comments are uniformly enthusiastically in favor of the larger size, Paul's drawings exclusively, and the "Fidick" paper. Everyone, it seems, is now happy.—Editor.)

"Wot is dees, a system?" So Milt Gross would ask if he saw the constant changing of **WONDER STORIES**' size. Congratulations! Again **WONDER STORIES** has scored. It has always been my favorite science fiction mag, and always will be as long as it holds to the high standard it has since its inception. You were wrong in changing the mag to the "Woolly Wild West" and "Slushy Stories" type, but thank heaven you realized it, and again changed it to the large, dignified size.

The improvements were magnificently conceived and carried out. Paul will now have a chance to widen his field. And with the good grade of paper, **WONDER STORIES** looks splendid! Now, if ever, the **PERFECT** science fiction magazine has been constructed.

Let me add I think "Exiles of the Moon" is the greatest serial ever run in the magazine. It's ending is superb!

LINUS HOGENMILLER,
502 N. Washington,
Farmington, Missouri.

You ask us, "what more can we give you?" We now have good paper, good illustrations, good stories and a large-sized magazine. All I can suggest is that you give us more and better stories, if possible. I would like to see **WONDER STORIES** come out twice a month. It seems more like old times now that Paul is doing all the art work again. His illustrations in the November issue were excellent.

JACK DARROW,
4225 N. Spaulding Ave.,
Chicago, Ill.

No kidding! The new **WONDER STORIES** monthly is GREAT! Would sell now on appearance alone. You now have a magazine to be well proud of—so have we readers. Congratulations!

FRANK R. MOORE,
2516 Bagley Ave.,
Detroit, Mich.

Though I often find much that is praiseworthy in the sciencefiction magazines, I rarely write laudatory letters to their editors. But the action of the editors and publishers of **WONDER STORIES**, in making the changes that appear in the November issue, demands heartfelt and sincere praise—and I yield to the demand. By returning to the large size, and changing the paper, **WONDER STORIES** at one stroke rises high above its former high level. Elevating the magazine to the smooth-paper class was Mr. Gernsback's second big boost for science fiction, the first being his starting the first sciencefiction publication.

L. A. ESHBACH,
1606 Forest St.,
Reading, Pa.

Frankly, I prefer the smaller sized magazine, but I know that the majority usually prevail, excepting, of course, in the prohibition question, so I'm for **WONDER STORIES** no matter what form it is in. However, congratulations on the change of paper. It makes reading much easier on the eyes. Please note that my family is voting solidly for science-fiction movies.

HARRY V. SPURLING,
1019 Morton Ave.,
Elgin, Ill.

Just a few lines to tell you how wholly satisfactory is the new make-up of **WONDER STORIES**. It actually does not seem like the same magazine, in comparison with its appearance during the past year. It is at least 50 per cent better than it has ever been.

Now, by all means, do not change the magazine! Unless, of course it is definitely for the better, which would well-nigh be impossible.

As it is now, **WONDER STORIES** is easily among the "classiest" periodicals on the market.
ROBERT ARNOLD,
1663 Dwight,
Springfield, Mass.

RADIO'S livest magazine

Needful to everyone interested in Radio is a radio magazine that includes in each issue all of the outstanding developments of the month. It is important that such news be carried, which is most advantageous to the largest number of readers. This is exactly what **RADIO-CRAFT** does. In it you will find articles which broadly cover topics that are interesting and which should be thoroughly known by those who find radio a diversion. From the radio man's point of view these articles are written, still every amateur or "ham" can get the utmost from them. Such well known authorities as Lee de Forest, C. E. Denton, Sylvan Harris, Bertram M. Freed and others contribute articles regularly to **RADIO-CRAFT**. Such educational articles on the following are to be found in every issue: New radio tubes—Short wave sets and converters—Automobile radio—Airplane radio—Latest in radio—Testing equipment—Radio construction—Money-making ideas—Serving radio and dozens of other articles.

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At last **WONDER STORIES** has awakened! I sincerely hope that the increase in size will be accompanied by more scientific stories having less sensational and sex content. Do not hesitate to include stories written in a lighter vein, spun about some peculiar scientific fact now known. Include a few science detective yarns and replace some of the "Science Questions and Answers" by a seriously written editorial on some educational bit of modern science. However, enough of these suggestions.

I wish you would kindly print my name and address, if possible, and the following request: I would like to get in touch with as many amateur experimenters as possible, who are interested in Organic Chemistry, and in high frequency and static electricity.

WILLIAM S. SYKORA,
31-51 41st St.,
Long Island City, N. Y.

While **WONDER STORIES** was in the small size, I seemed to lose interest in the magazine. Of course many excellent stories and serials brightened me a little, but the small size seemed to cheapen the magazine.

When the publishers announced the return to the large size, I instantly acquired new interest.

The issue before me has far exceeded my expectations. The cover is striking, colorful, eye-catching; an example of Paul's best work. The paper is delightful, a welcome surprise. The illustrations by Paul are remarkable.

All and all I think of a superlative to give the magazine, the term "wonderful" is most appropriate.

The last installment of "Exiles of the Moon" is just what I expected—clear, concise, and with a well thought out ending. The shorter stories are all good. The whole magazine is an example of superior achievement.

ARTHUR K. BERKOWITZ,
768 Beck St.,
Bronx, N. Y.

Thank you, Mr. Editor, for that splendid November issue. We now have the **QUALITY** magazine of the market. Let's keep it that way!

Yours truly,

J. HARVEY HAGGARD,
940 5th Street,
San Bernardino, Calif.

It is with great happiness that I inform you of an extremely commendable fact which, no doubt, thousands of New Yorkers, and people living closer to you than I, have already told you: You are the editor of the world's finest science-fiction magazine—*bar none*. Your new **WONDER STORIES** makes the rest of the science-fiction magazines look like common trash. Why there's no comparison. I don't think the other publications will be able to stand the gaff. Well, why should they expect people to read their inferior stuff when they can get **WONDER STORIES** with large size, smooth high quality paper, illustrations solely by Paul, A.I. authors, and photos of the writers of the tales?

FORREST J. ACKERMAN,
530 Staples Ave.,
San Francisco, Calif.

I approve of the change to the large size. It makes the magazine look much more dignified, and Paul's cover illustrations look better.

The improved paper stock is especially a boon to those who save the magazine, since this kind of paper lasts longer and makes the book thinner, thus saving space. To me, however, the greatest improvement is the exclusive use of Paul's illustrations. Frankly, I never did like Marchionni's drawings, as they were lifeless and stilted. Your other artists were even worse.

You ask what more you can give us. The answer is, most emphatically, REPRINTS! The demand for reprints has become so insistent lately that I don't see how the editors of science-fiction magazines have the courage to ignore it. The two reprint serials you ran in **AIR WONDER STORIES** were extremely popular, to judge from the readers' letters. I'd appreciate very much the answer to this question: *Are we, or are we not, to have reprints?* Even one reprint a year would be eagerly welcomed by at least 80% of the readers. If you are still in doubt, why not hold a vote? So, do the readers a favor; give us reprints!

MICHAEL FOGARIS,
157 Fourth St.,
Passaic, N. J.



Bring Back That Youthful Chin Line

Two profiles of the same girl are shown above—one before and one after using the **CORINTHIAN COMBINATION TREATMENT**. See what a difference the youthful chin line makes.

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BE SURE to read the interesting announcement on page 910 of this issue—it's well worth spending a few minutes to read it.



Only \$6.25
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BOOK REVIEW

THE ANSWER OF THE AGES by Stanton A. Coblenz, 380 pages, stiff cloth covers, size 6 1/2 x 9 1/4. Published by the Cosmopolitan Book Corp., New York. Price \$5.00.

Mr. Coblenz, who is well known to readers of WONDER STORIES presents a comprehensive and stimulating account of the viewpoint of humanity, through the ages, on the question of life after death.

Beginning with primitive peoples, Mr. Coblenz analyzes the records to discover why and what they thought about survival after death. He carries his story through the early days of man's civilization to the present. He gives not only the fumbling gropings of the cave man for an explanation of what death is, and what happens to the dead one, but also the enlightened viewpoints of the "scientific spiritualists" such as Sir Oliver Lodge and Arthur Conan Doyle.

Mr. Coblenz' conclusion is a return to the Brahman philosophy of India. Rather than a personal, physical survival, he sees "an underlying identity of all souls with the world-soul or Brahman . . . a realization of the oneness with the universal soul."

Whatever one's opinions on the subject, and practically everyone has his opinion, he will find in this book a real "Answer of the Ages" to the question of our chances for survival. The book is scholarly, well written and if one is willing to give it concentrated attention, he will find it fascinating throughout.

THE SCIENTIFIC OUTLOOK by Bertrand Russell, 275 pages, stiff cloth covers. Size 6 x 8 1/4. Published by W. W. Norton & Co., Inc., New York. Price \$3.00.

Mr. Russell, who has turned from the trade of a mathematician to that of a philosopher, gives in this volume his summary of what science is, what it has done for our world and what it is likely to do.

His conclusion is that "it would be absurd to suppose that the explosive power of science is exhausted, or has even reached its maximum. It is far more likely that science will continue for centuries to come to produce more and more rapid changes. One may suppose that a new equilibrium will eventually be reached, either when so much is known that a lifetime is not sufficient to reach the frontier of knowledge, and therefore further discovery must await some new increase in longevity, or when men become bored with the new toy, become weary of the strenuousness required in the making of scientific advances and become content to enjoy the fruits of former labors . . . Or again it may prove that no scientific society is capable of stability and that a reversion to barbarism is a necessary condition to the continuance of human life."

Mr. Russell first outlines a history of science and the scientific method of thought, he then discusses the nature of the scientific technique and its limitations, and finally describes the nature of a scientific society in which science is not only a part of the processes of industry but also integral with the social and political life of the people.

The book is easy to read, very stimulating and provocative. It is an outstanding contribution for the man of average scientific education trying to work his way through the maze of scientific speculation, thought and discoveries of the era.

THE INSECT MENACE by L. O. Howard, 350 pages, stiff cloth cover, illustrated. Size 5 1/2 x 8 1/4. Published by The Century Co., New York. Price \$3.50.

The author, who is the retired Chief Entomologist of the U. S. Department of Agriculture, has written one of the most fascinating books on insects that the reviewer has encountered. From his wide store of knowledge of all insect life, and of their menace to the race, he has drawn what might be called an epic picture of the struggle of man and insect for supremacy on the earth.

His analysis of the reasons why the insect type has persisted on the earth is done extraordinarily well; and one cannot but leave those

chapters with a feeling that we have a most formidable enemy. The enormous versatility of insects in adapting themselves to almost any natural conditions; their overwhelming fertility; their strength, and lastly their efficient social organizations (as in the ants, wasps, and bees) cannot but leave the reader with the impression that they are immensely more fitted for survival on earth than is man.

We have had abundant evidence of their content with us by their destruction of some \$2,000,000,000 of crops yearly and their plagues of disease. The conclusion of the author is that the final struggle is yet to come; and he is sufficiently impressed with the insects to believe it possible that they will one day reign over the earth; and in fact they will continue to exist when all other life forms have perished.

This book should be read.

NEW VIEWS OF SPACE, MATTER AND TIME by J. D. Ross, 393 pages, illustrated, size 6 1/4 x 9 1/4, stiff cloth covers. Published by Gateway Printing Company, Seattle, Wash.

The author, who is an expert electrical engineer and chief engineer of the Seattle light and power system, attempts here to reconcile the notions of space, matter and time, and to construct an explanation that shall include them all.

From experiments conducted over a number of years, he tries not only to solve the question of the nature of light, but also of matter, and to bring into line an hitherto unexplained group-work.

The book is fairly technical, but never becomes too abstract. The author's conclusion is that our physics of today is built upon a quite insubstantial basis. We are attempting, he says to explain complicated phenomena of nature when we have not first built a satisfactory group-work.

The book should repay careful reading for its with a sound knowledge of mathematics as physics. It is stimulating throughout, and has the virtue of being divorced from any preconception as to what we know about physical laws and what we think we know.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION ETC., REQUIRED BY THE ACT OF CONGRESS OF OCTOBER 3, 1917.

Of Wonder Stories, published monthly at 404 N. Wesley Ave., Mt. Morris, Ill., for Oct. 1, 1931.

Before a Notary Public in and for the State and County aforesaid, personally appeared Irving S. Manheimer, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the Wonder Stories, and that the following is, to the best of his knowledge, a true and correct statement of the ownership, management (and if a daily paper, the circulation), etc. of the aforesaid publication for the date August 24, 1932, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Stellar Publishing Corp., 404 N. Wesley Ave., Mt. Morris, Ill.; Editor, Hugo Gernsbach, 98 Park Place, New York; Managing Editor, David Lasser, 98 Park Place, New York; Business Manager, Irving S. Manheimer, 84 Park Place, New York.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent. or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as that of each individual member, must be given.) Stellar Publishing Corp., 404 N. Wesley Ave., Mt. Morris, Ill.; Hugo Gernsbach, 98 Park Place, New York; David Lasser, 98 Park Place, New York; Irving S. Manheimer, 84 Park Place, New York; D. Manheimer, 98 Park Place, New York.

3. That the known bondholders, mortgagees, and other security holders owning or holding one per cent. or more of the total amount of stock, bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the names and addresses of the persons giving the names of the owners, stockholders, and security holders, if any, consist not only the names of the stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or persons acting as trustee, or other such relation, is given; and also the said two paragraphs contain statements embracing names and addresses of all persons believed to be at the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as such, hold stock and securities in a capacity other than that of a bona fide owner, and this affiant swears to the truth of the statements that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as set out above.

IRVING S. MANHEIMER,
Business Manager.

Sworn to and subscribed before me this 24th day of September, 1931.

(Seal) MAURICE COYNE.

(My commission expires March 30, 1932.)

Afraid to face the TRUTH About Himself!

What most men would hear
if their mirrors could talk

HIS own conscience TELLS HIM how miserably he has fallen below what others had expected of him—and what he had DREAMED for himself

If a mirror reflecting his daily life could TALK it would say, "You're BOUND to stay in a rut. You are SCATTER-BRAINED and GRASSHOPPER-MINDED. You nibble at everything and master nothing! Your thoughts are always HAZY and you can't THINK THINGS THROUGH. You just DAY DREAM and hope you will get 'some lucky break' And, deep in your heart, you KNOW that these ARE your faults. That's why you're TIMID and self-conscious—afraid of your JOB, of your ABILITY, of your JUDGMENT, of your FUTURE!"

At a SHOW-DOWN like this the "BIG" man FACES the truth, and DOES SOMETHING about it.

But the "LITTLE" man TURNS HIS BACK on his shortcomings, FINDS EXCUSES, and DOES NOTHING.

A certain task finds him LACKING in the PERSISTENCE to carry it through. So he says that his employers "want so much work for what they pay me!"

A splendid opportunity FINDS HIM UNPREPARED, and another seizes it. Then he says "some fellows get all the breaks!"

Some circumstance shows up his utter LACK OF PURPOSE IN LIFE (so plainly that even HE cannot escape admitting it). So he COOKS UP AN ALIBI about having been "unable to go to 'lege!'"

You don't need to be told that this "LITTLE" man fills a "LITTLE" job—is paid a SMALL salary—and has INSIGNIFICANT future prospects. These are the rewards of THE MAN WHO FOOLS HIMSELF!

But this man's REAL TRAGEDY is that he is almost always a fellow of great promise and fine POSSIBILITIES!

If he would only use his ingenuity in FINDING OUT what's wrong with himself, instead of WASTING it in ACCOUNTING FOR HIS FAILURES—he would soon discover that he has the makings of a "BIG MAN!"

What is the one important difference between "the Failure" and "the Success"? It is this priceless ability that "the Success" has of FACING his mental HANDICAPS and replacing them with definite mental ADVANTAGES.

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CAL PLAN to bring together the natural powers he already has, strengthen them, and PUT THEM TO WORK.

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Thousands who read this announcement will DO NOTHING WHATEVER about it. The little effort and the will needed to send for this book—which is FREE—will be "JUST TOO MUCH" FOR THEM! How can these people EVER gain what they hope for, dream about? They are the skeptics, the doubters, the "show me" wiseacres.

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You'll be fasci-
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required to list the writers who have copied or adapted some of the plots. Hardly a great novel, or a poor one, exists, in which the plot is not in part or in whole taken from the Decameron. No one can know literature, can call himself truly sophisticated, truly a master of life in all its infinite variety, until he has drunk from the bottomless loving cup of that genial old Italian, Giovanni Boccaccio.

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